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Annual report of the surgeon general

Treasury Department. **Marine-Hospital Service.**

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ANNUAL REPORT

OF THE

SUPERVISING SURGEON-GENERAL

OF THE

MARINE-HOSPITAL SERVICE OF THE UNITED STATES

Serial
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1892/93

FOR THE

FISCAL YEAR 1893.

IN TWO VOLUMES.
VOLUME I.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1894.

Treasury Department. Marine-Hospital Service.

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TREASURY DEPARTMENT.
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Office of U. S. Marine-Hospital Service.

MARINE HOSPITAL SERVICE
1798 ★ U·S ★ 1871

OPERATIONS

OF THE

UNITED STATES MARINE-HOSPITAL SERVICE.

1893.

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REPORT TO THE SECRETARY.

Treasury Department,
Office Supervising Surgeon-General M. H. S.,
November 30, 1893.

Sir: I have the honor to submit the following report of the operations of the Marine-Hospital Service for the fiscal year ended June 30, 1893, this being the ninety-fifth year of the Service and the twenty-second annual report.[1] In addition to the statistical portion of the report, which terminates with the fiscal year, various transactions of the Service to the present date are included.

Respectfully, yours,

Walter Wyman,
Supervising Surgeon-General U. S. Marine-Hospital Service.

The Secretary of the Treasury.

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[1] Previous enumeration of reports and "year of service" herewith corrected. See Annual Reports 1882 and 1883, and Annual Reports 1887 and 1888.

REPORT OF THE SUPERVISING SURGEON-GENERAL OF THE MARINE-HOSPITAL SERVICE.

MEDICAL CORPS.

During the fiscal year 1893 two boards were convened for the examination of applicants for admission into the medical corps. The number of applicants was 50. Of the 35 who presented themselves for examination 3 received the required grade mark of 80 per cent.

APPOINTMENTS AND PROMOTIONS.

During the year six successful candidates were appointed to the grade of assistant surgeon, and five assistant surgeons were promoted, after examination, to the grade of passed assistant surgeon. One assistant surgeon was appointed in accordance with an act of Congress approved March 1, 1893.

RESIGNATION.

The resignation of one assistant surgeon was accepted June 30, 1893.

CASUALTIES.

Death from yellow fever of Assistant Surg. John W. Branham.—On August 20, 1893, Assistant Surg. John W. Branham died of yellow fever in Brunswick, Ga., where he had but recently been assigned to duty under the provisions of the act of February 15, 1893, to execute the quarantine regulations promulgated by the Secretary of the Treasury. A detailed statement of the circumstances under which Dr. Branham was sent to Brunswick, his service and death at that station, and biographical sketch will be found on pages 11, 12, and 58 of Vol. II of this report.

Dr. Spencer C. Devan, passed assistant surgeon U. S. Marine-Hospital Service, died at Philadelphia, Pa., February 3, 1893, of tuberculosis of the lungs, contracted in the line of duty.

Dr. Devan was born March 18, 1856, in the city of New York, and afterwards moved to New Brunswick, N. J., where he received an academic education, and entered Rutger's College in his fourteenth year, but on account of his mother's health he soon left the college to accompany her to Florida. Later he studied medicine and was graduated from the medical department of the University of New York in

June, 1879. He served as intern in the Charity Hospital, New York, for more than a year, and then located in Kansas City, Mo., where he practiced his profession until October, 1881, when, after passing a competitive examination before a board of marine-hospital surgeons, in which he was fourth in a class of eight successful candidates, he was appointed an assistant surgeon and assigned to duty in San Francisco. In the summers of 1882 and 1883 he was detailed as medical officer of the revenue cutter *Corwin* during her cruise in Alaskan waters. Other stations were Portland, Oreg.; Port Townsend, Wash.; St. Louis, Mo.; South Atlantic Quarantine, Savannah, Ga.; Washington, D. C.; Buffalo, N. Y.; Portland, Me.; Norfolk, Va.; Delaware Breakwater Quarantine, and Philadelphia. While on duty at Norfolk Dr. Devan first gave evidence of tubercular infection, which steadily progressed during the period of his service as medical officer in command of the Delaware Breakwater Quarantine, and while on special duty in Philadelphia, until January 7, less than a month before his death, being no longer able to perform his duties, he applied for and was granted sixty days leave.

As a friend Dr. Devan was genial and sincere; as an officer he was able, energetic, and devoted to his duty.

On September 9, 1893, the Marine Hospital at Port Townsend was destroyed by fire without the loss of life. The building was of little value, and will be replaced by a new one, for which appropriation was made by the last Congress, and for which plans have been prepared.

Destruction of Chandeleur Island.—On October 1 a violent hurricane visited the gulf quarantine station, located on Chandeleur Island in the Gulf of Mexico, and on the following day the hospital ward was completely destroyed and swept out to sea. Five persons connected with the station lost their lives, namely: Steward L. A. Duckert, a nurse, a boatman, and two patients. A full account of the storm will be found in the portion of this report relating to the quarantine stations. The quarantine was immediately transferred to Ship Island, and some Congressional action is required to legalize the establishment of a permanent station on that island, its removal from Ship Island to Chandeleur Island having been directed by special act of Congress.

MARINE HOSPITALS AND RELIEF FURNISHED.

During the year ended June 30, 1893, the total number of patients treated in the service was 53,317, of which number 14,857 were treated in hospital, the remainder, 38,460, being office or dispensary patients.

The following is a statement of the repairs and alterations made during the past fiscal year and those still needed at the several hospitals:

Hospital at Baltimore, Md. (erected 1887).—Surg. G. W. Stoner reports the following repairs made at this hospital:

> Repairs of minor character only have been made on the buildings and grounds during the past fiscal year, viz: recovering and repairing steam pipes, repairs to fences, stable floors, and to plumbing. This work was performed by the attendants; the cost of material used did not exceed $135.

The following described repairs will be necessary during the fiscal year ending June 30, 1894:

Resetting and painting brick piers supporting the wards; the chimneys need to be recrowned. The estimated cost of this mason work will be $200. The interior of wards, portions of executive building, and laundry require repainting, at a probable cost of $500. The well which supplies the drinking water is in bad condition and needs cleaning out and walling up with stone or hard brick, at a probable cost of $100. Minor repairs will be necessary from time to time upon fences, slate roofs, doors, and steps. Proposals are now being invited to make repairs to bath tubs and water-closets of the surgeon's residence.

Hospital at Boston, Mass. (*erected 1860*).—Surg. H. W. Sawtelle makes the following statement of repairs and alterations:

Slight repairs to the slate and tin roofs, at a cost of $50. Three new radiators put in—two in the quarters of the assistant surgeon and one in the Wild ward—costing $287.

The old iron smokestack, which was worn out, was taken down and a new one erected, at a cost of $1,000.

The following repairs have been made to the plumbing in lavatory on the fourth floor: Two new washbowls, two urinals with slate stalls, and one new water-closet, the old hot and cold water pipes replaced with brass pipe. Proper ventilation has been provided by carrying the main soil pipe of the hospital through the roof, and by extending the 3-inch soil pipe which receives the waste from lavatories on the first, second, and third floors to the fourth floor, and ventilating same by connecting it to the main soil pipe on the fourth floor. The old floor in this lavatory has been taken up and a new hard-pine floor laid, at a total cost of $306.

One of the ventilators on the roof, which was blown down during a storm, was repaired and replaced, at a cost of $20.

The following work has been performed by hospital attendants, viz: Five wards, smoking rooms on second floor, hospital dining room, steward's dining room, cupola, tin coverings on roof and balconies, halls on four floors, and the quarters of the passed assistant surgeon repainted. All the doors in the four halls and the baseboards have been grained in light oak and varnished, as also the woodwork in the dispensary and the hospital dining room.

The following general repairs have been made: Two entries in basement, one to surgeon's kitchen, the other to subsistence storerooms, repaired, and drains to sewer lowered. A section of the copper conductor in entry to surgeon's kitchen in basement, which was worn out, replaced with 4-inch cast-iron soil pipes. The fire pit in old boiler room filled up and repaired. Rotten flooring in wood room in basement of surgeon's quarters removed; water-closet put in, with tank, etc., complete; gas pipe extended to closet and small room containing same refloored, wainscoted, and painted. All the 254 windows of the hospital building have been reputtied and reglazed where needed. Minor repairs have been made to heating apparatus, valves repacked, and hot-air registers repaired. Specifications for miscellaneous repairs to the building, including oiling and painting of exterior, new ward and hall flooring, wire fences, repairs to coal shed, brick walk, and driveways have been prepared by the Supervising Architect, and proposals for this work have been received under advertisement and forwarded to the Department, the amount of lowest bid being $4,987.

The following is a statement of alterations and repairs required at hospital during the fiscal year ending June 30, 1894, with estimated cost:

New flooring for two of the outbuildings, the ironing room and basement of surgeon's quarters; cost, $175. The first hall floor should be replaced by encaustic tiling or marble; cost, $650. The woodwork in laundry is dilapidated and should be renewed, walls replastered; cost, $150. The old wire fence at the north end of the reservation is unserviceable and should be replaced by a high board fence; cost, $350. A new stable is urgently needed. Plans for this and a new autopsy room have been prepared by the Surpervising Architect, and advertisement for proposals has been made, but owing to an insufficiency of the appropriation available all of the bids received were rejected. A strip of land 43 feet wide on Broadway and extending to the marine hospital reservation, belonging to the naval hospital, having been formally transferred to the Treasury Department for the purpose of constructing a roadway directly from Broadway to the hospital; plans, specifications, and construction estimated at $3,500. An elevator is much needed; cost, $1,000.

Hospital at Cairo, Ill. (*erected 1885*).—Passed Assistant Surg. A. H. Glennan reports the following repairs and alterations made upon the building and grounds during the past fiscal year:

Proposal for the following repairs and alterations, amounting to $7,374, was accepted by letter of the Supervising Architect of June 24, 1893, and the work is now in a fair state of progress: Replacing old steps leading to surgeon's residence, executive and laundry buildings, and wards by new ones; replacing old, defective ventilators by new ones; placing support under ceiling of boiler room, constructing new galvanized iron ceiling for boiler room; putting water-closets in executive and laundry buildings (new stationary washstand in the latter), also one porcelain-lined bath tub in surgeon's residence; general painting of exterior and interior of buildings; reshingling wards, corridors, and verandas; filling old cesspool and cistern.

Repairs to heating apparatus have been made at a cost of $295. No repairs or alterations will be necessary during the fiscal year ending June 30, 1894, except such minor incidental and unavoidable repairs which can not be specified previously.

Hospital at Chicago, Ill. (*erected, 1873.*)—Surg. John B. Hamilton reports the following repairs and improvements made during the past fiscal year:

The driveway on the north end of building was improved by resurfacing with crushed stone, at an expense of $100. The wards were painted and the attendants' rooms in the fourth story and halls in the basement were kalsomined, at a cost of $360. Two sets of hard-coal grate bars were put in the furnace, at a cost of $212. Minor repairs have been made to the plumbing, windows, and roof.

There is also made the following report of repairs and alterations, which will be necessary during the fiscal year ending June 30, 1894:

The furnaces are in need of minor repairs, and a few new valves will be needed, the estimated cost of which will be $150.

The following items are contained in a specification prepared by the superintendent of repairs; advertisements for proposals to do the work are now being made: Surgeon's quarters are to be repainted throughout; also all the wards, and the surgical operating room. The floor of the Miller ward is to be renewed, the old plumbing removed, and new water-closets and lavatory furnished. All bathrooms are to be refloored with tile and wainscoting repainted with porcelain paint. The basement hall floors, now rotten, are to be replaced with artificial stone or cement. The coal shed is to be reshingled, and floor and doors renewed. A new surface drain is to be constructed to carry the surface water away, to prevent flooding the engine room. The stonework of the hospital building and brickwork of engine house and smokestack are to be repainted. A new flagstaff 110 feet high is to be erected east of the building, and the rotten flag-staff on the building removed. Two new sinks are to be furnished in the kitchen. The estimated cost of this work is $8,000.

A new operating room planned according to modern surgical ideas should be built. The room now used for such purpose is not only unsuitable, but needed for other uses. There is no reception room in this hospital where patients can see their friends. The operating room, if built of stone to correspond with the outside of the building, would cost $10,000 complete.

I respectfully renew my recommendation for the building suitable for the residence for the commanding officer. The quarters are at present insufficient in case the full complement of officers were serving at this station, and there is not sufficient room for the families of three officers. The estimate of cost of such a building can best be furnished from the Architect's office, and would vary according to the plan adopted. To make it sightly and to correspond with the main building, it should have a stone facing, at least. This could correspond with the private houses in the vicinity. The local building stone is not very expensive.

An electric-light plant would be very desirable, giving better light and more security against fire, the estimated cost of which will not exceed $3,000.

The fence about the grounds are falling down and should be replaced by a low brick wall, at an estimated cost of $4,000.

The sidewalk in front of the reservation is out of repair, and only careful attention keeps it from being dangerous. It is an old wooden sidewalk.

The street in front of the reservation is the only unpaved street in the vicinity. The city has macadamized one-half of the street, but the side next the hospital remains in its natural state, a constant eyesore and annoyance and a cause of much unpleasant comment on part of people passing by the institution and those living in the neighborhood.

Hospital at Cincinnati (*erected 1884*).—Passed Assistant Surg. P. C. Kalloch reports the following alterations and repairs made during the fiscal year ending June 30, 1893:

A new sidewalk has been laid on Third street at a cost of $349.30; repairs to plumbing, closets, etc., to the amount of $144.14; repairs to roofs and gutters, $79.84. The other repairs are of a minor nature, at a total cost of $76.

The following repairs will be necessary, and are given in detail, with their estimated cost:

Repairing stairway in central building, $50; repairing old wall and moving bathroom in steward's quarters, $250; new window frames and sash, main building, $45; new lattice between main building and stable, $55; new outside stairway to front entrance surgeon's quarters, $35; painting roofs of all the buildings except office, $226; painting brickwork of wards, $138; relaying brick walk to front gate, $140; new entrance through front wall, gate, and walk, $55; repairs to laundry, $645; replacing small office on corner, with building for office and attendants' quarters, $2,450; new 3-inch water meter, with connection to mains, $240; two fire plugs and new piping to building, $325; two new windows in laundry, three circular slat windows in roof of stable, $40; ventilating windows in cellar of surgeon's quarters, $45.

Hospital at Detroit, Mich. (*erected 1857*).—Surg. W. H. H. Hutton makes the following reports of repairs made to this hospital in the past fiscal year:

Minor repairs costing $209.38 have been made on this hospital during the past fiscal year, of which $155 was for paints and oils; the painting has been done by the hospital attendants.

The buildings and grounds are in fair condition; the ceilings, walls, and woodwork of the third floor, as well as the wards on the second floor, need painting, which can be done with the material on hand, and a further allowance of about $200. To put this hospital in good sanitary condition it is advisable to provide means for ventilation and to refit the bathrooms and water-closets with better floors, walls, and apparatus. At present there is no means of ventilation, except the doors and windows. The building is warmed by steam radiators, and there is no way by which fresh air can be admitted, except in the manner stated. The construction of this building is such that I can see no way to improve the ventilation, except by the construction of a steam chamber in the basement through which fresh air can be forced by a rotary blower or fan, and the warmed air distributed through the old hot-air flues that remain from the former mode of heating the building by furnaces. The exit of the foul air can best be provided for by making large regulating openings into the chimneys, of which each ward has two and each room one, and constructing a large air shaft from the center of the main hall through the roof, with a large suction funnel, such as is used in the ventilation of steamship compartments. The probable cost is estimated at $2,000 to $2,500, and is thought absolutely necessary to bring the sanatary condition of this hospital anyway near the modern ideas of hospital ventilation.

In regard to the water-closets, the floors and walls are made of gray, unpolished marble, badly fitted, which absorbs urine, and is hard to keep reasonably clean. Floors and the wall to the height of 3 feet should be replaced with glazed tiling laid in pure cement.

The bowls and slop sinks are old, and should be replaced with new apparatus of the best quality. Most of the bath tubs are old and of an obsolete style; they should be replaced by porelain-lined tubs, set on feet. With the foregoing improvements only minor repairs will be necessary for the coming fiscal year.

Hospital at Evansville, Ind. (*erected 1891*).—Assistant Surg. Seaton Norman makes the following report of repairs and alterations made during the fiscal year ending June 30, 1893:

One double-chamber, No. 7, Bowden filter, set up as per contract, $375; material and labor to connect down pipe with sewer, $443.50; material and labor to construct steps leading to tank house, $25; material and labor for plank sidewalk, $170; material and labor to construct partitions and shelving for storerooms, $247; material and labor to construct chimney in stable and placing stoves in dead room, $62.50; furnishing material and labor for constructing 800 lineal feet of brick, in accordance with contract, $523; minor miscellaneous repairs, $72.65; total, $1,921.65.

The following repairs and additions are reported necessary for the coming fiscal year:

The exteriors of all the buildings, especially the executive building and the surgeon's residence, have faded to a great extent, and will need a double coating of paint. The interior of all the buildings show a good state of preservation, except the surgeon's residence, which I would recommend to be painted. Estimated cost, $2,000.

An artificial stone sidewalk should be constructed from the main entrance to the executive building, around the flagstaff, and to the officers' quarters. The roadways are made of broken rock, and are too rough for pedestrians. Estimated cost, $375.

The erection of a stone retaining wall along the northern boundary of the reservation is absolutely required to preserve the washing away of that portion of the grounds. The fence stands just on the border where the wall should be constructed, and the laundry building is situated within 2 feet of the receding earth. The fence is already undermined, and there is nothing to retard the gradual but continuous excavation produced by the heavy rains. Estimated cost, $10,000. Minor repairs are estimated at $25.

Hospital at Louisville, Ky. (*erected 1852.*)—Acting Assistant Surg. W. M. Griffiths, in temporary charge at the time that the report of condition of this hospital and the repairs necessary thereon was called for, makes the following report:

Minor repairs to kitchen range, plumbing, new sinks, and repair to chimney only have been made during the past fiscal year, at the small cost of $88.22.

The following estimate is submitted for work considered absolutely necessary during the present fiscal year:

The hospital building has been in use for a period exceeding forty years, and in view of modern improvements is not considered well adapted for the care of patients.

At certain seasons it is overcrowded and does not afford suitable accommodations for patients or officers and necessary attendants.

Quarters for the medical officers should be erected independent of the hospital building; a separate building should be erected for the laundry, in which also the dead room, storerooms, and quarters for attendants could be provided; the stable and carriage house now in use are scarcely worth repairing and are too small for the requirements of the service at this port. The building is heated by means of stoves and grates, involving much labor and giving indifferent results.

No expenditure has ever been made on the walks and approaches to the hospital. In order to keep in line with the improvements in this part of the city the walks should be graded, curbing set, and proper pavements laid. A new and improved range should be provided for the hospital kitchen, and walks should be made leading to outbuildings and back gate.

The following are the estimated amounts required to make the improvements above recommended:

Quarters for medical officer, $6,500; laundry building, storerooms, and attendants' quarters, $5,000; stable and carriage house, $4,000; low-pressure heating apparatus, including hot-water boiler and connections, $4,500; approaches and sidewalk, $2,500; range and laundry plant, $2,500; sidewalk on grounds, $750; total, $28,250.

Hospital at Key West, Fla. (*erected 1840*).—Assistant Surg. J. M. Eager, in temporary charge at the time the report of the condition of this hospital and the repairs necessary thereon was called for, makes the following report:

On January 18, 1893, the new isolation ward and the new wharf with storehouse, boat and bathhouse, and water-closets were completed; the cost of the same was $2,750.

Extensive repairs and alterations are at present in progress, the work being done by W. A. Johnson & Bro. These miscellaneous repairs include an additional story to the old laundry building, moving the said laundry to a new position, and placing the same in a general condition of good repair. General repairs have been made to the main building, such as repairs to stairs, floors, corridors, blinds, windows, doors, etc.

In addition to the work already finished and that contracted for, the following work is manifestly necessary during the fiscal year ending June 30, 1894:

Stone wall.—The masonry of the breakwater on the south side of the hospital inclosure contains a break 28 by 36 by 36 feet in dimensions. The concrete pavement of the sea wall on the same side is in need of repairs over an area 5 feet wide by 80 feet long; estimated cost, $300.

Fence.—The wooden fence inclosing the hospital grounds is in a very dilapidated condition; the entire fence, including gates, should be replaced; the estimated cost, including painting, is made at $450. Minor repairs are necessary on cistern, dead house, and wood house, as well as small repairs to plumbing apparatus.

It will also be necessary to make an expenditure for painting, at a cost of about $300.

Hospital at Memphis, Tenn. (*erected 1886*).—Passed Assistant Surg. A. C. Smith reports the following alterations and repairs made to this building and grounds during the fiscal year ending June 30, 1893.

These repairs consisted for the most part of small items and aggregated $249.94. Repairs at slight cost have been made to the heater in surgeon's quarters, and the range, boiler, and water-back in hospital kitchen have been replaced.

I have the honor to report that the following repairs are necessary: Repainting the exteriors of all the buildings, including the metal roofs, the fences, and flagstaff. It is also necessary that the interior of the buildings should be painted. Preliminary to this painting, minor repairs, requiring but a small expenditure, will be necessary on the building. The basement floors in the dining room, larder, and kitchen of the surgeon's quarters are decayed and should be relaid. The water-closets are old and worn out, and should be replaced with new ones. The same may be said of the bath tubs. The water supply of the hospital is not sufficient for protection in case of fire, the pressure being 25 pounds. The 2-inch pipe supplying the reservation is not taken from the nearest mains of the water company. Hydrants should be placed in the grounds of larger size.

I have omitted from the foregoing report the subject of heating apparatus for the buildings, upon which reports have been made.

Hospital at Mobile, Ala. (*erected 1843*).—Surg. C. S. D. Fessenden makes the following statement of repairs and alterations for the past fiscal year:

I have the honor to state that only minor repairs have been made at this hospital. The hospital kitchen range had a new water-back and hot-water boiler, with new pipes, at a cost of $25. The plastering was repaired in several places at a cost of $25. The large water tanks at the top of the building were repaired by having new pipes and connections put in at a cost of $9.50. A new hoisting apparatus was put in on the top floor at a cost of $12. New bath tubs for patients were put in at a cost of $157. The total cost of same was $228.

The repairs that are necessary for the ensuing fiscal year are as follows:

The fireplaces need putting in order for the coming winter; plastering needs repairs and repainting in very many places; the floors in the basement need new sleepers, and should be relaid; the main halls of the building need repair, painting, etc. A new water pipe from the stable to the garden is needed for watering the latter, as now all the water is carried by hand. The total estimated cost of these repairs is $880.

Hospital at New Orleans, La. (*erected 1885*).—Surg. James M. Gassaway reports the following repairs and alterations made during the past fiscal year:

The new or center ward authorized by act of Congress, for which contract was made December 28, 1891, was completed and formally accepted by the Department December 8, 1892. In addition to the original plan the structure was still further improved by setting the building 50 feet north of the original position first designed, thus adding greatly to its air space and to that of the two existing wards. Electric wiring was placed throughout, and such changes in the woodwork as experience has taught to be necessary in this climate. The amount appropriated for this ward was $10,000. The entire station, with the exception of the surgeon's quarters, stable, laundry, and storerooms, have been painted on the outside, and the wards, executive offices, hallways, and attendants' quarters painted on the inside. The wooden fence and iron railing, about 2,000 linear feet, have received one coat of paint or asphalt, and all the ironwork, including steam pipes and traps, boilers and water piping, have also been painted. This work has been done by a painter, employed 123 days, at $2.50 per diem, and by the steward and attendants, at a total cost, including material and trusses, of $502.20.

Many small miscellaneous repairs have been made to the woodwork of the buildings. Footways and bridges have been made from refused material left by former contractors, or from material secured from broken up or abandoned coal barges left on the batture. This work was done by a carpenter, working 120 days, at $2 per day, and the attendants; total cost estimated at $360. The roadways connecting the public street with the hospital buildings were repaired by 1,000 barrels of shells, at an expense of $190.

A substantial, well-tarred plank walk, 1,180 feet long by 3 feet 2 inches wide, was laid on the river front of the reservation, making a good sidewalk, at a cost of $298.

A porch was added to the passed assistant surgeon's quarters, doorways cut in the quarters, and also in those of the surgeon; the stable has been repaired; new roof put on the boiler house and the house otherwise repaired. A new and solid foundation for the boiler feed pump, and repairs to the foundations of the sewer and water pumps, and repairs to the supports of main water tanks have been made. Improved arrangement has been made in the hot-water supply to the different buildings. The total expenditures, excluding the cost of new ward, was $13,169.

It is recommended that a new laundry building, with modern steam appliances, be constructed, to replace the antiquated methods still in vogue at this station. This building should also contain quarters for the attendants and storerooms, these now occupying, with the laundry, a number of dilapidated negro quarters of antebellum days. Estimated cost, $6,300.

An appropriation of $3,000 has been made to improve the water supply and increase the water pressure for protection against fire; work will probably be commenced soon.

A new boiler of 20 horse power should replace the one now in use, which is patched and becoming unsafe.

A gateway for vehicles and foot passengers should be cut through the east and one through the west walls, with a driveway of 18 feet. The brick pavement or sidewalk on three sides of the reservation should be taken up and relaid in cement, to prevent the growth of weeds and grass.

Should a new laundry not be built, it will be necessary to put new roofs (shingles) on the cabins. Repairs will be necessary on the stable, and a new cesspool should be placed beside the present one, which is not large enough to hold one day's sewage.

The surgeon's quarters should have the rear building raised to two stories and a back stairway added. The second-story gallery, contemplated by the original plan, should be completed.

The passed assistant surgeon's quarters should be raised about 8 feet, and the kitchen and laundry placed in the basement. The second-floor gallery, contemplated by the original plan, should be completed. In this semitropical climate these alterations would add to the health and comfort of the officer and his family.

Hospital at Portland, Me. (*erected 1859*).—Passed Assistant Surg. C. E. Banks reports the following repairs to this hospital during the past fiscal year:

Steam pump, $470; plumbing repairs, $35; supply tank, $150; new hard-wood floors in two wards, and convalescent patients' room, windows, casings, and stool caps repaired throughout, new front door, $586.75; lazaretto, ice house, and certain rooms painted by attendants, cost of paint, $80.40; radiators, with fittings, $32.40; repairing horse stalls, $14.50.

The building is in a good state of repair, and only emergency repairs are anticipated, as occasion arises, for the fiscal year ending June 30, 1894.

The station should have a laundry plant, steam power, to replace the old hand apparatus of ancient date. Estimated cost about $1,000.

Hospital at Port Townsend, Wash. (*established 1883*).—By reason of a fire this hospital was, on September 9, 1893, rendered untenable and useless. The hospital was composed of old frame buildings, badly constructed, and in a decayed condition. The fire is thought to have originated from a defective flue between the ceiling and roof. The patients were all taken out without injury, and the records and most of the furniture saved. The actual loss sustained probably did not exceed $2,000. An act of Congress approved March 3, 1893, makes an appropriation of $30,000 for the erection of a hospital at Port

Townsend, Wash. The plans are now being prepared in the office of the Supervising Architect.

Hospital at San Francisco, Cal. (*erected 1875*).—Surg. John Godfrey reports the following repairs, together with the cost thereof, made at this station for the fiscal year ending June 30, 1893:

Rebuilding the chimney tops of the wards and executive buildings and renewing the chimney pipes for the Jackson ward heater; cost, $340.70. Concreting two cellar floors and a walk; cost, $249. New pipes were laid to conduct water from the tanks to buildings at a cost of $552.30 for material, the labor being performed by attendants. A new fence was constructed at a cost of $156, and a flagstaff at $300. New telephone posts were planted at a cost of $42. Material and repairs made to the electric-bell system at a cost of $49.60. Minor repairs to roof, plumbing, vapor engine, hydrants, ward outbuildings, and roads were made by the attendants.

The following is a report of repairs, etc., necessary for the preservation and proper maintenance of the hospital at this station of the ensuing fiscal year ending June 30, 1894:

The hospital buildings, officers quarters, tanks, and flagstaffs need painting. The quarters for officers, stewards, and attendants are inadequate; quarters for attendants have never been erected at this station, consequently they have to be quartered in wardrooms and other places. Quarters could be provided for them by the construction of a story over the dining room and kitchen. New floors are needed in the wards, bathrooms, and water-closets; the old water-closets, bath tubs, and urinals should be replaced by those of modern sanitary make. New floors and other repairs are necessary in the stable, as are minor repairs to the shed adjoining the stable.

Hospital at Wilmington, N. C. (*erected 1859*).—Assistant Surg. J. H. Oakley, in temporary charge at the time that the report of the condition of this hospital was called for, makes the following report of repairs and alterations made during the fiscal year ending June 30, 1893:

The walls of the surgeon's quarters were painted, the work being performed by the attendants. A porcelain sink was furnished and placed in position in the dispensary, with hot and cold water faucets, at a cost of $62. A new flagstaff was erected on the lawn at a cost of $325. There was furnished and put in position for the hospital kitchen a hot-water tank, as also one in the medical officer's kitchen, the tanks and necessary connections costing $128.75.

There was furnished and placed in position in the attic a large iron reservoir tank at a cost of $386.30.

The plumbing in this hospital is in a very unsatisfactory condition. Since the new tanks have been put in position the flushing tanks to the water-closets on the second floor have been dry, requiring water to be brought and thrown into the closets; the water service, both hot and cold, in the dispensary is not satisfactory. It is thought that cold water for the second floor should be supplied by a pipe separate from that supplying the lower floor and basement.

The roof of the hospital building needs paint. A system of electric bells is needed.

Hospital at Vineyard Haven, Mass. (*established 1880*).—Passed Assistant Surg. J. C. Perry reports the following repairs and alterations made at this station during the fiscal year ending June 30, 1893:

Dormer windows, as per proposals accepted July, 1892, $160; surveying site, $75; minor repairs to building, repairing flag pole, and a small expenditure for locks and hinges and lumber for steps only have been made.

An appropriation is now available to enlarge and improve the buildings at this station; plans and specifications being now in the hands of the Supervising Architect. The proposed plan is to move the present buildings farther back on the reservation, and to utilize them with the design of erecting other buildings. The buildings will be of frame, and the wards probably on the pavilion style.

A fence about the reservation is necessary as a protection from cows and other animals which pasture in the fields around the hospital. A new range for the hospital kitchen is needed, as well as some repairs to plastering, and outside steps.

Hospital at St. Louis, Mo. (*erected 1885*).—Passed Assistant Surg. C. T. Peckham reports the following repairs at this hospital during the fiscal year ending June 30, 1893:

Repairs to floors, stairs, doors, and roof, $274; new sewer, $1,210; paints, etc., $102; repairs to heating apparatus, $21.87; laundry machinery, $10. Minor repairs at small cost have been made to the plumbing, boiler, and siphon tank.

The main halls, walls, and ceiling, as well as the steps and railing in the old hospital building, have been painted by the attendants.

The following repairs and improvements are considered necessary for the ensuing fiscal year:

Water tank, black iron, 10,000 gallons, $600; new flooring to galleries and other parts of hospital, $500; new awning for executive and old hospital buildings, $300. Minor repairs will be necessary to hot-water boiler, sink in steward's quarters, fence, plastering, and painting.

A new barn and wagon house are much needed, the present one being very old and in a tumble-down condition, the estimated cost of $3,000.

CARE OF SEAMEN.

The provisions made for the care of seamen for the fiscal year ending June 30, 1894, both in United States marine hospitals and by contract, are set forth in the following circular:

[Circular.]

TREASURY DEPARTMENT,
OFFICE OF THE SUPERVISING SURGEON-GENERAL U. S. M. H. S.,
Washington, D. C., June 19, 1893.

The following contracts for the care of seamen entitled to relief from this Service, for the fiscal year ending June 30, 1894, are published for the information of accounting officers of the Treasury Department, disbursing agents, medical officers of the Marine-Hospital Service, acting assistant surgeons, and customs officers. This circular is to be regarded as official notification of the acceptance of the proposals made by the parties designated, and must be cited, giving its number and date, on all bills for the treatment and maintenance of seamen, and for the burial of deceased patients, as the authority for any expenditure incurred under its provisions. Charges will be allowed for the day of admission of a hospital patient, but not for the day of discharge or death. The right is reserved by the Secretary of the Treasury to terminate any contract whenever the interests of the Service require it. All relief must be furnished in accordance with the revised regulations of the Marine-Hospital Service; and, in consequence of the largely increased expenditures for relief, and of the limited sources of income, it has become necessary to give notice that, as provided in the regulations, no allowance will be made for expenditures incurred at any other station than those named in this circular.

The term "contagious diseases," whenever occurring in this circular, except as to specific contracts made otherwise, includes only those diseases which, under usual municipal regulations, are required to be treated in a pest house, namely: Cholera, yellow fever, plague, or smallpox, and, in some municipalities, measles.

WALTER WYMAN,
Supervising Surgeon-General U. S. Marine-Hospital Service.

Approved:
J. G. CARLISLE,
Secretary of the Treasury.

Albany, N. Y.—The medical attendance to be furnished by an acting assistant surgeon; the Albany Hospital to furnish quarters, subsistence, nursing, and medicines, at $1 per day.

Alexandria, Va.—The medical attendance to be furnished by an acting assistant surgeon; the Alexandria Infirmary to furnish quarters, subsistence, nursing, and medicines, at 90 cents per day.

Apalachicola, Fla.—Dr. J. D. Rush to furnish medical attendance and medicines, at $30 per month; Martha Campbell to furnish quarters, subsistence, and nursing, at $1 per day, and to provide for the burial of deceased patients, at $12.50 each.

Ashland, Wis.—St. Joseph's Hospital to furnish quarters, subsistence, nursing, medical attendance, and medicines, at $1 per day.

Ashtabula, Ohio.—The medical attendance to be furnished by an acting assistant surgeon; Mrs. Henry Whelpley to furnish quarters, subsistence, and nursing, at $1 per day; contagious diseases, $1.50 per day; John Ducro & Sons to provide for the burial of deceased patients, at $14 each. Patients requiring long-continued hospital treatment will be furnished transportation to the U. S. Marine Hospital at Detroit, Mich.

Astoria, Oreg.—The medical attendance to be furnished by an acting assistant surgeon; St. Mary's Hospital to furnish quarters, subsistence, nursing, medical attendance, and medicines, at $1 per day; E. W. Kuykendall to provide for the burial of deceased patients, at $14 each.

Baltimore, Md.—Hospital patients to be cared for in the U. S. Marine Hospital; George Rinehart to provide for the burial of deceased patients, at $16.50 each.

Bangor, Me.—The medical attendance to be furnished by an acting assistant surgeon; John Foley to furnish quarters, subsistence, and nursing, at $1 per day; Abel Hunt to provide for the burial of deceased patients, at $10 each.

Bath, Me.—The medical attendance to be furnished by an acting assistant surgeon; William J. Howard to furnish quarters, subsistence, and nursing, at $1 per day; John M. Clark to provide for the burial of deceased patients, at $14 each. Patients requiring long-continued hospital treatment will be furnished transportation to the U. S. Marine Hospital at Portland, Me.

Belfast, Me.—The medical attendance to be furnished by an acting assistant surgeon.

Bismarck, N. Dak.—The medical attendance will be furnished by an acting assistant surgeon; Lamborn Hospital to furnish quarters, subsistence, nursing, and medicines, at 90 cents per day; Philip B. Webb to provide for the burial of deceased patients, at $20 each.

Boston, Mass.—Hospital patients to be cared for in the U. S. Marine Hospital at Chelsea, Mass.; burial of deceased patients at the hospital cemetery; burial of foreign patients, at $10 each.

Bridgeport, Conn.—Bridgeport Hospital to furnish quarters, subsistence, nursing, medical attendance, and medicines, at $1 per day; Hawley, Wilmot & Reynolds to provide for the burial of deceased patients, at $16 each.

Brownsville, Tex.—The medical attendance to be furnished by an acting assistant surgeon. Until other arrangements are made, $1 per day will be allowed for the care of hospital patients.

Brunswick, Ga.—The medical attendance to be furnished by an acting assistant surgeon; Johanna Foley to furnish quarters, subsistence, and nursing, at 90 cents per day; contagious diseases, at $1.75 per day; Charles G. Moore to provide for the burial of deceased patients, at $15 each.

Buffalo, N. Y.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; the Buffalo Hospital (Sisters of Charity) to furnish quarters, subsistence, nursing, and medicines, at 80 cents per day; contagious diseases, at $2 per day; and to provide for the burial of deceased patients, at $10 each.

Burlington, Iowa.—The St. Francis Hospital to furnish quarters, subsistence, medical attendance, nursing, and medicines, at 90 cents per day; J. Prugh to provide for the burial of deceased patients, at $15 each.

Burlington, Vt.—The "Mary Fletcher Hospital" to furnish quarters, subsistence, nursing, medical attendance, and medicines, at $1 per day.

Cairo, Ill.—Hospital patients to be cared for in the U. S. Marine Hospital; L. E. Falconer to provide for the burial of deceased patients, at $9 each.

Cambridge, Md.—The medical attendance to be furnished by an acting assistant surgeon. Hospital care and treatment will be furnished only to patients who are unable to bear transportation to the U. S. Marine Hospital at Baltimore, Md.

Charleston, S. C.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; out-patients to be treated at the dispensary (Atlantic Wharf); St. Francis Xavier's Infirmary to furnish quarters, subsistence, nursing, and medicines, at 85 cents per day; contagious diseases, $2 per day; and to provide for the burial of deceased patients, at $10 each. Seamen requiring long-continued hospital treatment will be furnished transportation to the U. S. Marine Hospital at Wilmington, N. C.

Chattanooga, Tenn.—The medical attendance to be furnished by an acting assistant surgeon; Hamilton County Hospital to furnish quarters, subsistence, nursing, and medicines, at 65 cents per day; Harry E. Chapman to provide for the burial of deceased patients, at $15 each.

Chicago, Ill.—Hospital patients to be cared for in the U. S. Marine Hospital; Fred. Klaner to provide for the burial of deceased patients, at $18.50 each.

Cincinnati, Ohio.—Hospital patients to be cared for in the U. S. Marine Hospital; dispensary at the hospital, southeast corner Third and Kilgour streets; John B. Habig to provide for the burial of deceased white patients, at $16 each; colored patients, at $17.50 each.

Cleveland, Ohio.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; the "Cleveland City Hospital Association" to furnish quarters, subsistence, nursing, and medicines, in the U. S. Marine Hospital under lease of September 21, 1875, at 64 cents per day. The hospital to be kept in repair by the association; Flynn, Abel & Froelk to furnish ambulance service, at $2 for each patient; G. Jasper to provide for the burial of deceased patients, at $11 each.

Corpus Christi, Tex.—The medical attendance to be furnished by an acting assistant surgeon; James E. Ellis to furnish quarters, subsistence, and nursing, at $1 per day.

Darien, Ga.—The medical attendance to be furnished by an acting assistant surgeon; patients requiring hospital treatment will be furnished transportation to Brunswick, Ga.

Detroit, Mich.—Hospital patients to be cared for in the U. S. Marine Hospital; out-patients to be treated at the dispensary, No. 90 Griswold street; J. A. Dick & Co. to provide for the burial of deceased patients, at $8.90 each.

Dubuque, Iowa.—The medical attendance to be furnished by an acting assistant surgeon; St. Joseph's Mercy Hospital to furnish ambulance service, quarters, subsistence, nursing, and medicines, at $1 per day.

Duluth, Minn.—The medical attendance to be furnished by an acting assistant surgeon; St. Luke's Hospital to furnish quarters, subsistence, nursing, and medicines, at 90 cents per day; John W. Stewart to provide for the burial of deceased patients, at $15 each.

Edenton, N. C.—R. Dillard, M. D., to furnish quarters, subsistence, nursing, medical attendance, and medicines, at $2 per day. Patients requiring long-continued hospital treatment will be furnished transportation to the U. S. Marine Hospital at Wilmington, N. C. For out-patients $1 will be allowed for each medical examination, and 25 cents additional for each time medicine is furnished.

Elizabeth City, N. C.—The medical attendance to be furnished by an acting assistant surgeon.

Ellsworth, Me.—The medical attendance to be furnished by an acting assistant surgeon. Hospital care and treatment to be furnished only to patients who are unable to bear transportation to the U. S. Marine Hospital at Portland, Me.

Erie, Pa.—The medical attendance to be furnished by an acting assistant surgeon;

Hamot Hospital Association to furnish quarters, subsistence, and nursing, at 71 cents per day. Patients requiring long-continued hospital treatment will be furnished transportation to the U. S. Marine Hospital at Detroit, Mich.

Escanaba, Mich.—The medical attendance to be furnished by an acting assistant surgeon; Delta County Hospital to furnish quarters, subsistence, and nursing, at $1 per day.

Eureka, Cal.—The medical attendance to be furnished by an acting assistant surgeon; Maria Anderson to furnish quarters, subsistence, nursing, and medicines, at 95 cents per day.

Evansville, Ind.—Hospital patients to be cared for in the U. S. Marine Hospital; Henry Klee & Son to provide for the burial of deceased patients, at $20.50 each.

Fernandina, Fla.—The medical attendance to be furnished by an acting assistant surgeon; John H. Mills to furnish quarters, subsistence, and nursing, at $1 per day; contagious diseases, at $2 per day; and to provide for the burial of deceased patients, at $15 each.

Fredericksburg, Va.—The medical attendance to be furnished by an acting assistant surgeon; Amelia Parrott to furnish quarters, subsistence, nursing, and medicines, at $1 per day; contagious diseases, at $3 per day; George Nossett to provide for the burial of deceased patients, at $12.50 each.

Gallipolis, Ohio.—The medical attendance to be furnished by an acting assistant surgeon; Milton Ralph to furnish quarters, subsistence, and nursing, at 90 cents per day; and to provide office quarters for the acting assistant surgeon, at $10 per month; G. J. Wetherholt to provide for the burial of deceased patients, at $18 each.

Galveston, Tex.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; St. Mary's Infirmary to furnish ambulance service, quarters, subsistence, nursing, and medicines, at $1 per day; contagious diseases, at $2 per day; and to provide for the burial of deceased patients, at $10 each. Patients requiring long-continued hospital treatment will be furnished transportation to the U. S. Marine Hospital at New Orleans.

Georgetown, D. C.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; out-patients to be treated at the dispensary, No. 3 B street SE., Washington; Providence Hospital, Washington, to furnish quarters, subsistence, nursing, intern attendance, and medicines, at 75 cents per day.

Georgetown, S. C.—The medical attendance to be furnished by an acting assistant surgeon. John J. Lang and Susan Dennison to furnish quarters, subsistence, and nursing, at $1 per day; Joseph J. Dunmore to provide for the burial of deceased patients, at $18 each.

Gloucester, Mass.—The medical attendance to be furnished by an acting assistant surgeon. Patients requiring hospital care and treatment to be furnished transportation to the U. S. Marine Hospital at Chelsea, Mass.

The Government Hospital for the Insane, District of Columbia.—Under act of Congress, March 3, 1875, to furnish quarters, subsistence, nursing, medical attendance, and medicines, at $4.50 per week, for each insane patient admitted upon the order of the Secretary of the Treasury.

Grand Haven, Mich.—The medical attendance to be furnished by an acting assistant surgeon; Nancy Palmer to furnish quarters, subsistence, and nursing, at $1 per day.

Green Bay, Wis.—The medical attendance to be furnished by an acting assistant surgeon; St. Vincent Hospital to furnish quarters, subsistence, nursing, and medicines, at $1 per day; contagious diseases, at $3 per day: Lefebore & Schumacher to provide for the burial of deceased patients, at $16 each.

Hartford, Conn.—The Hartford Hospital to furnish quarters, subsistence, nursing, medical attendance, and medicines, at $1 per day; G. W. Woolley & Son to provide for the burial of deceased patients, at $13 each.

Jacksonville, Fla.—The medical attendance to be furnished by an acting assistant surgeon; Duval County Hospital to furnish quarters, subsistence, and nursing, at

$1 per day; Edward J. Gordon to provide for the burial of deceased patients, at $12.50 each.

Keokuk, Iowa.—Mercy Hospital to furnish quarters, subsistence, nursing, medical attendance, and medicines, at 43 cents per day.

Key West, Fla.—Hospital patients to be cared for in the U. S. Marine Hospital; John A. Preston to provide for the burial of deceased patients, at $8 each.

La Crosse, Wis.—The medical attendance to be furnished by an acting assistant surgeon; St. Francis Hospital, M. Ludovica, superior, to furnish quarters, subsistence, nursing, and medicines, at $1 per day; Theo. Mannstedt to provide for the burial of deceased patients, at $20 each.

Lewes, Del.—The medical attendance to be furnished by an acting assistant surgeon; Levin D. Lynch to furnish quarters, subsistence, nursing, and medicines, at $1 per day; Henry F. Conwell to provide for the burial of deceased patients, at $15 each.

Little Rock, Ark.—The medical attendance to be furnished by an acting assistant surgeon; Little Rock Infirmary to furnish quarters, subsistence, nursing, and medicines, at $1 per day; Cook & Jones to provide for the burial of deceased patients, at $9.75 each.

Louisville, Ky.—Hospital patients to be cared for in the U. S. Marine Hospital; out-patients to be treated at the dispensary, 915 Jefferson street; Lee E. Cralle to provide for the burial of deceased patients, at $17 each.

Ludington, Mich.—The medical attendance to be furnished by an acting assistant surgeon; Hannibal D. Linsley to furnish quarters, subsistence, and nursing, at $1 per day.

Machias, Me.—The medical attendance to be furnished by an acting assistant surgeon; Abiel E. Preble to furnish quarters, subsistence, and nursing, at 86 cents per day; L. H. Hanscom to provide for the burial of deceased patients, at $15 each.

Manistee, Mich.—The medical attendance to be furnished by an acting assistant surgeon; Mercy Hospital to furnish quarters, subsistence, nursing, and medicines, at 90 cents per day.

Marquette, Mich.—The medical attendance to be furnished by an acting assistant surgeon; St. Mary's Hospital to furnish quarters, subsistence, and nursing, at $1 per day; contagious diseases, at $4 per day; and to provide for burial of deceased patients, at $15 each.

Marshfield, Oreg.—The medical attendance to be furnished by an acting assistant surgeon; John Snyder to furnish quarters, subsistence, nursing, and medicines, at $1.20 per day.

Memphis, Tenn.—Hospital patients to be cared for in the U. S. Marine Hospital; John Walsh to provide for the burial of deceased patients, at $9 each.

Michigan City, Ind.—The medical attendance to be furnished by an acting assistant surgeon; seamen requiring hospital treatment must make application at the U. S. Marine Hospital at Chicago, Ill.

Milwaukee, Wis.—The medical attendance to be furnished by an acting assistant surgeon; out-patients to be treated at No. 466 Milwaukee street; St. Mary's Hospital to furnish quarters, subsistence, nursing, and medicines, at 80 cents per day; Charles E. Judson to provide for the burial of deceased patients, at $15.75 each. Chronic hospital patients to be furnished transportation to the U. S. Marine Hospital at Chicago, Ill.

Mobile, Ala.—Hospital patients to be cared for in the U. S. Marine Hospital; McKay & Roche to provide for the burial of deceased patients, at $12.50 each.

Nashville, Tenn.—The medical attendance to be furnished by an acting assistant surgeon; Nashville City Hospital to furnish quarters, subsistence, nursing, and medicines, at 90 cents per day.

New Bedford, Mass.—The medical attendance to be furnished by an acting assistant surgeon. Patients requiring hospital care and treatment, if able to bear transportation, will be sent to the U. S. Marine Hospital at Vineyard Haven.

Newbern, N. C.—The medical attendance to be furnished by an acting assistant surgeon. Patients requiring long-continued hospital treatment will be furnished transportation to the U. S. Marine Hospital at Wilmington, N. C. For other hospital patients, Cora A. Bragg to furnish quarters, subsistence, and nursing, at 75 cents per day; William F. James to provide for the burial of deceased patients, at $12.50 each.

New Haven, Conn.—The medical attendance to be furnished by an acting assistant surgeon; the New Haven General Hospital to furnish quarters, subsistence, nursing, and medicines, at $1 per day, and to provide for the burial of deceased patients, at $15 each. The New Haven board of health to furnish all necessary care and treatment in cases of any contagious disease, at $3 per day.

New London, Conn.—The medical attendance to be furnished by an acting assistant surgeon; the Memorial Hospital Association to furnish quarters, subsistence, nursing, and medicines, at $1 per day; contagious diseases, at $3 per day.

New Orleans, La.—Hospital patients to be cared for in the U. S. Marine Hospital; Schopp & Son to provide for the burial of deceased patients, at $10 each.

Newport, Ark.—The medical attendance to be furnished by an acting assistant surgeon; Puss Watkins to furnish quarters, subsistence, and nursing, at $1 per day.

Newport, R. I.—The medical attendance to be furnished by an acting assistant surgeon; the Newport Hospital to furnish quarters, subsistence, nursing, and medicines, at $1 per day; Michael Cottrell to provide for the burial of deceased patients, at $11.50 each. Patients requiring long-continued hospital treatment will be furnished transportation to the Marine Hospital, Stapleton, Staten Island, N. Y.

New York, N. Y.—Hospital patients to be cared for in the Marine Hospital, Stapleton, Staten Island, N. Y.; out-patients to be treated at the dispensary, near the "New Barge Office, Battery;" G. F. Schaefer, of Staten Island, to provide for the burial of deceased patients, at $7.90 each.

Norfolk, Va.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; St. Vincent Hospital to furnish quarters, subsistence, nursing, ambulance service, and medicines, at 83 cents per day; J. E. Edwards to provide for the burial of deceased patients, at $9.75 each.

Ogdensburg, N. Y.—The medical attendance to be furnished by an acting assistant surgeon; the City Hospital to furnish quarters, subsistence, medicines, and nursing, at $1.25 per day, and to provide for the burial of deceased patients, at $15 each.

Oswego, N. Y.—The medical attendance to be furnished by an acting assistant surgeon; the Oswego Hospital to furnish quarters, subsistence, nursing, and medicines, at $1.25 per day.

Pensacola, Fla.—The medical attendance to be furnished by an acting assistant surgeon; R. W. Hargis to furnish quarters, subsistence, nursing, and medicines, at $1 per day; and S. B. Hutchinson & Co. to provide for the burial of deceased patients, at $15 each. Patients requiring long-continued hospital treatment will be furnished transportation to the U. S. Marine Hospital at Mobile, Ala.

Philadelphia, Pa.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; the German Hospital to furnish ambulance service, quarters, subsistence, nursing, medicines, and one interne, at $1 per day, and to provide for the burial of deceased patients, at $15 each.

Pittsburg, Pa.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; out-patients to be treated at No. 96 Wood street; the Mercy Hospital to furnish quarters, subsistence, nursing, medicines, and a resident physician, at 94 cents per day; J. J. Giltinan to provide for the burial of deceased patients, at $13 each. Care and treatment of contagious cases to be furnished by the Pittsburg Department of Public Safety, at $2 per day.

Port Huron, Mich.—The medical attendance to be furnished by an acting assistant surgeon; "Hospital and Home" to furnish quarters, subsistence, and nursing, at $1 per day. Patients requiring long-continued hospital treatment will be furnished transportation to the U. S. Marine Hospital at Detroit. George Thompson to provide for the burial of deceased patients, at $8 each.

Portland, Me.—Hospital patients to be cared for in the U. S. Marine Hospital; Ilsley Bros. to provide for burial of deceased patients, at $6.50 each.

Portland, Oreg.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; out-patients to be treated at the dispensary, room 21, Union Block, corner of First and Stark streets; St. Vincent's Hospital to furnish quarters, subsistence, nursing, and medicines, at 59 cents per day; contagious diseases, at $2 per day; F. S. Dunning to provide for the burial of deceased patients, at $10 each.

Portsmouth, N. H.—The medical attendance to be furnished by an acting assistant surgeon; Cottage Hospital to furnish quarters, subsistence, and nursing, at $1 per day; contagious diseases, at $3 per day.

Port Townsend, Wash.—Hospital patients to be cared for in the U. S. Marine Hospital; George E. Starrett to provide for the burial of deceased patients, at $16 each.

Providence, R. I.—The Rhode Island Hospital to furnish quarters, subsistence, nursing, medical attendance, and medicines, at $1 per day, and to provide for the burial of deceased patients, at $12 each. Patients requiring long-continued hospital treatment will be furnished transportation to the U. S. Marine Hospital at Chelsea (port of Boston).

Richmond, Va.—The medical attendance to be furnished by an acting assistant surgeon; out-patients to be treated at the Marine-Hospital office, custom-house building; "Retreat for the Sick" Hospital to furnish quarters, subsistence, nursing, and medicines, at $1 per day.

Rockland, Me.—The medical attendance to be furnished by an acting assistant surgeon; John S. Ranlett to furnish quarters, subsistence, and nursing, at $1 per day; E. A. Burpee to provide for the burial of deceased patients, at $14 each. Patients requiring long-continued hospital treatment to be furnished transportation to the U. S. Marine Hospital at Portland, Me.

Rome, Ga.—The medical attendance to be furnished by an acting assistant surgeon; the Martha Battey Hospital to furnish quarters, subsistence, and nursing, at $1 per day.

Saginaw, Mich.—The medical attendance to be furnished by an acting assistant surgeon; St. Mary's Hospital to furnish quarters, subsistance, nursing, and medicines, at 65 cents per day. Patients requiring long-continued hospital treatment to be furnished transportation to the U. S. Marine Hospital at Detroit, Mich.

St. Louis, Mo.—Hospital patients to be cared for in the U. S. Marine Hospital; Christ. Shawacker to provide for the burial of deceased patients, at $12 each.

St. Paul, Minn.—The medical attendance to be furnished by an acting assistant surgeon; St. Luke's Hospital to furnish quarters, subsistance, nursing, and medicines, at $1 per day, and to provide for the burial of deceased patients, at $8 each.

San Diego, Cal.—Drs. W. A. Winder and C. C. Valle to furnish quarters, subsistence, nursing, medical attendance, and medicines, at $1.25 a day; contagious diseases, at $1.50 per day; and to provide for the burial of deceased patients, at $8 each.

Sandusky, Ohio.—The medical attendance to be furnished by an acting assistant surgeon; the Good Samaritan Hospital to furnish quarters, subsistence, and nursing, at $1 per day.

San Francisco, Cal.—Hospital patients to be cared for in the U. S. Marine Hospital; out-patients to be treated at the Marine Hospital office, rooms 1-3, Appraiser's building; burial of deceased patients at the hospital cemetery; burial of foreign seamen, at $10 each.

San Pedro, Cal.—Randolph W. Hill, M. D., to furnish quarters, subsistence, nursing, medical attendance, and medicines, at 90 cents per day; contagious diseases, at $1.50 per day; and to provide for the burial of deceased patients, at $7 each.

Sault Ste. Marie, Mich.—The medical attendance to be furnished by an acting assistant surgeon; Mrs. Annie McNeeley to furnish quarters, subsistence, and nursing, at $1 per day; J. Vanderhook to provide for the burial of deceased patients, at $5 each.

Savannah, Ga.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; St. Joseph's Infirmary to furnish quarters, subsistence, nursing, and medicines, at $1 per day; John H. Fox & Co. to provide for the burial of deceased patients, at $7.75 each. Patients requiring long-continued hospital treatment will be furnished transportation to the U. S. Marine Hospital at Wilmington, N. C.

Seattle, Wash.—The medical attendance to be furnished by an acting assistant surgeon; Providence Hospital to furnish quarters, subsistence, nursing, and medicines, at 75 cents per day.

Shreveport, La.—The medical attendance to be furnished by an acting assistant surgeon; out-patients to be treated at the Marine-Hospital office; Shreveport Charity Hospital to furnish quarters, subsistence, nursing, and medicines, at $1 per day; J. S. Rendall to provide for the burial of deceased patients, at $11 each.

Sitka, Alaska.—The medical attendance to be furnished by an acting assistant surgeon.

Solomons, Md.—The medical attendance to be furnished by an acting assistant surgeon; F. P. Harten to furnish subsistence, nursing, fuel, and lights, at $1 per day; T. M. White to provide for the burial of deceased patients, at $7.50 each. Patients requiring long-continued hospital treatment to be furnished transportation to the U. S. Marine Hospital at Baltimore, Md.

Superior, Wis.—The medical attendance to be furnished by an acting assistant surgeon; St. Francis Hospital to furnish quarters, subsistence, nursing, and medicines, at 90 cents per day.

Tacoma, Wash.—The medical attendance to be furnished by an acting assistant surgeon; Fanny C. Paddock Hospital to furnish quarters, subsistence, nursing, and medicines, at 63 cents per day.

Tappahannock, Va.—Drs. Jeffries and Robinson to furnish quarters, subsistence, nursing, medical attendance, and medicines, at Tappahannock; Dr. W. J. Newbill at Carters Creek, and Dr. W. S. Christian at Urbana, each at $1.50 per day. Patients requiring long-continued hospital treatment will be transferred to the U. S. Marine Hospital at Baltimore, Md.

Toledo, Ohio.—The medical attendance to be furnished by an acting assistant surgeon; St. Vincent Hospital to furnish quarters, subsistence, nursing, and medicines, at 80 cents per day; contagious diseases, $2 per day; and to provide for the burial of deceased patients, at $15 each.

Tuckerton, N. J.—The medical attendance to be furnished by an acting assistant surgeon.

Vicksburg, Miss.—The medical attendance to be furnished by an acting assistant surgeon; the Vicksburg City Hospital to furnish quarters, subsistance, nursing, and medicine, at $1 per day; contagious diseases, $3 per day.

Vineyard Haven, Mass.—Hospital patients to be cared for in the U. S. Marine Hospital; M. C. Vincent to provide for the burial of deceased patients, at $17 each.

Wheeling, W. Va.—The medical attendance to be furnished by an acting assistant surgeon; the Wheeling Hospital to furnish quarters, subsistence, nursing, and medicines, at 75 cents per day.

Wilmington, N. C.—Hospital patients to be cared for in the U. S. Marine Hospital; Edward Green to provide for the burial of deceased patients, at $12 each.

At the following-named ports, hospital or other relief will be furnished only under the provisions of the Regulations for the Marine-Hospital Service as to *third-class* stations: Barnstable, Mass.; Beaufort, N. C.; Beaufort, S. C.; Castine, Me.; Cedar Keys, Fla.; Chatham, Mass.; Dennis, Mass.; Eastport, Me.; Edgartown, Mass.; Hyannis, Mass.; Newport News, Va.; Perth Amboy, N. J.; Provincetown, Mass.; Sag Harbor, N. Y.; Salem, Mass.; Somers Point, N. J.; Tampa, Fla.; Waldoboro, Me.; Wilmington, Del.; Wiscasset, Me.

The rate at ports not specifically provided for by this circular will, in each special case, be fixed by the Department, upon the recommendation of the proper officer, in accordance with the regulations.

The rate of charge for seamen from vessels of the Navy and Coast Survey, admitted to hospital under the provisions of the regulations, and for foreign seamen admitted under the act of March 3, 1875, is hereby fixed at the uniform rate of $1 per diem.

At all ports not otherwise specified, the dispensary is located at the custom-house or marine hospital.

PURVEYING DIVISION.

In the purveying division 431 requisitions for medical and other supplies have been filled to meet the wants of 19 U. S. Marine Hospitals and 42 other relief stations of the Service.

Ten national quarantine stations, two United States revenue cutters, the Emergency Hospital at the barge office, and the Insane Hospital at Ellis Island, New York Harbor, under the control of the Immigration Service, have received their medical supplies through this division.

The following is a summary of the cost of the various supplies purchased for issue during the year :

Medical supplies	$14, 433. 33
Hospital stores	6, 871. 38
Hospital sundries	7, 839. 76
Surgical instruments and appliances	4, 644. 61
Bedding and clothing	13, 278. 99
Medical books and journals	852. 47

Of these amounts the Service was reimbursed in the sum of $7,232.17 for supplies furnished quarantine stations, the Revenue-Marine, and the Immigration Services.

AID TO OTHER BRANCHES OF THE GOVERNMENT SERVICE.

Aid has been given to other branches of the Government service as follows:

(1) *Aid to the Life-Saving Service.*—During the year ended June 30, 1893, there were 1,095 surfmen and keepers examined, of which number 41 were rejected for physical causes. All claims for pensions made by keepers and crews of the Life-Saving Service under the act of May 2, 1882, have been passed upon in the office of the Surgeon-General.

(2) *Aid to the Inspection Service of Steamboats.*—During the year 1,353 pilots were examined with regard to their sight, more particularly with regard to their ability to distinguish colors; 48 were rejected, 34 on account of color-blindness.

(3) *Aid to the Revenue-Marine Service.*—Four boards, composed of medical officers of the Marine-Hospital Service, were convened for the physical examination of officers of the Revenue Marine Service, and n the physical examination of candidates for appointment in that Service. There were 279 seamen examined physically as a prerequisite to their enlistment, of which number 22 were rejected.

(4) *Aid given to the Immigration Service.*—Medical officers of the Marine-Hospital Service are specially detailed at the following ports for medical inspection of immigrants, namely: Boston, New York, Philadelphia, and Baltimore. At all other ports the regular officer on duty at the station is available for this service as occasion requires.

The following reports have been received from medical officers stationed at the ports mentioned, showing the number of immigrants examined and rejected:

Portland, Me.—Examined, 250; rejected, none.

Boston, Mass.—Examined, 71,592; rejected, 22.

New York.—Total number inspected upon arrival, 356,064; number examined physically, certified, and recorded upon arrival, 4,069. Of these there were sent to hospital, 1,425; sent before the commissioner or board of special inquiry[1] for action, 2,259; recorded for minor defects, 395. Under the one-year clause: Certified for deportation, 272, admitted to hospital, 547.

Philadelphia, Pa.—Examined, 29,294; rejected, 33.

Baltimore, Md.—Examined, 26,183; temporarily detained in hospital, 86.

New Orleans, La.—Examined, 2,929; rejected, none.

ACKNOWLEDGMENTS.

Acknowledgment is due the honorable the Secretary of War for the transfer of Reedy Island for quarantine purposes:

To the honorable the Secretary of the Navy, for his offer of steam launches and other aid in quarantine measures at the port of New York:

To the Revenue-Marine Service, for cordial cooperation in quarantine measures, furnishing steamers for patrol and inspection in New York Harbor, at Brunswick, Ga., Beaufort, S. C., and frequent service in transportation in the South Atlantic and Gulf waters:

To the Life-Saving Service, for vigilance on the part of the keepers and crews, in accordance with the following circular:

CIRCULAR.—IN AID OF THE ENFORCEMENT OF QUARANTINE REGULATIONS.

TREASURY DEPARTMENT,
OFFICE GENERAL SUPERINTENDENT LIFE-SAVING SERVICE,
Washington, D. C., September 2, 1893.

To Keepers of Life-Saving Stations:

Information has been received that quantities of bedding, garbage, and other articles are being washed ashore from vessels sailing from ports infected with epidemic disease. Some of these may have been used by patients on the voyage, and the danger from them may be serious.

You are therefore directed to watch carefully for such articles, and in the event of any being found to collect the same by rakes or other means, without actually handling them, dry and burn them, in the meantime guarding them and allowing no person to handle them.

Efforts may also be made to evade the quarantine regulations of the country by persons attempting to land from vessels from infected ports on beaches and places outside of established ports of entry. You will prevent the accomplishment of all such attempts within your province.

This circular will supersede circulars, Department Nos. 156 and 162, of 1892.

S. I. KIMBALL,
General Superintendent.

Approved:

CHARLES S. HAMLIN,
Acting Secretary.

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[1] In May, 1893, the final disposition of all cases was placed in the hands of a board of special inquiry.

Acknowledgment is also due to the Coast Survey for services in the survey of Reedy Island preliminary to the establishment of a quarantine station, the survey of Hog Island, in the Chesapeake Bay, for the same purpose, and for charts and other publications.

WORLD'S COLUMBIAN EXPOSITION.

In conjunction with other bureaus of the Treasury Department the Marine-Hospital Service was represented in the World's Columbian Exposition of 1893 by a display in the Government Building illustrative of the workings of the Service in its several branches. The exhibit was divided into three general classes·

(1) Marine-Hospital Service.
(2) Quarantine Service.
(3) Laboratory.

In the division of the Marine-Hospital Service proper were exhibited all the equipments pertaining to a marine hospital.

The division of the quarantine service embraced a model of a quarantine station, a model of a detention camp, disinfecting apparatus in use at quarantine stations and by municipalities, and all the appurtenances used by the Service in preventing the spread of epidemic disease.

The laboratory exhibit showed a well-equipped laboratory, bacteriological and chemical, designed to meet all requirements in the investigation of subjects relating to preventive medicine.

The board of awards has notified the Bureau that diplomas have been granted to the Marine-Hospital Service on account of the following exhibits:

(1) Surgical instruments.
(2) Hospital furniture.
(3) Quarantine apparatus.
(4) Bacteriological laboratory and display of bacteria.
(5) Cooling cabinet for use in the investigation of cholera.
(6) Statistical sanitary publications of great value.

SPECIAL REPORTS.

MARINE-HOSPITAL SERVICE.

MEDICAL, SURGICAL, AND DESCRIPTIVE.

REMARKABLE CASE OF ANEURISM OF AORTA—PATIENT LIVED THREE DAYS AFTER RUPTURE.

By Surg. P. H. BAILHACHE.

R. W.; aged 54 years; native of Finland; admitted to U. S. Marine Hospital, San Francisco, Cal., August 12, 1891.

History.—Nothing distinctive as to syphilis. Always has been strong and healthy. Noticed a pulsating tumor in suprasternal region about eight months ago. Previously had been subject to pain in the chest, paroxysmal, and increased by exertion.

Physical examination.—Well-marked arcus senilis—pulsating tumor occupying place of first piece of sternum, which has been absorbed. No venous stasis. Left radial pulse weaker than right. No bruit—aortic second sound accentuated.

Dr. F. W. D'Evelyn, of San Francisco, was consulted by patient in early summer of 1889, and following are the doctor's notes (somewhat condensed) of the case:

"History, except for arduous nature of occupation, favorable. Patient well nourished, general health good; is a strong man. Complains of almost constant pain, varies from a 'stitch' to a dull, heavy ache—most marked in left mammary region from parti-sternal line to anterior axillary line; at times 'stitch' appears in left supraclavicular region. No pain in arm, no dyspnœa, no dysphagia, no pressure symptoms; pain not intensified by motion, exertion, or pressure. Has been told his trouble is intercostal neuralgia, as a result of several examinations.

"*Physical examination.*—Well-marked arcus senilis. Left radial pulse a little less constant than right. (No tracing.) Area of heart dullness normal; no increase of dullness on line of aortic arch. Heart sounds normal, except that aortic second sound at base had a superadded quality, i. e., the valve closed with normal tension, but the sound was sustained for a longer period than normal, giving it the character of a reverberation not at all like the increased intensity oftentimes heard when the media transmits the sound more readily than normal. It suggested an increase in the diameter of the vessel, not at the valves or sinuses, but sufficiently near to act as a 'sound chamber.' On these physical signs a diagnosis of aortic thoracic aneurism was made and patient advised to discontinue his heavy work and avoid all extra exertion. Patient disappeared for many months, and upon his return presented a small but distinct aneurismal swelling at aortic cartilage. Patient had made a sea voyage during interval."

January 30, 1892.—Tumor much reduced in size; pulsation and pain lessened. Patient directed to remain in bed and given ℞ Potass. Iodide, sat. sol. 25.00. Sig.: 10 drops in water after meals; increase drop by drop daily to 60 drops 3 times a day.

From February 1, 1892, until about the middle of December the case progressed steadily downward, the tumor slowly enlarging from February 6 and the pain increasing somewhat. The treatment consisted in occasional arterial sedatives; anodynes as needed to produce sleep, and more or less complete rest. At Christmas time, on his urgent request, he was allowed to visit friends in the city, returning December 27, complaining of increased pain. The tumor had now for some time presented two well-marked projections, one directed up under the chin, the other out in front at the right side. (The condition is well shown in the photographs taken by Passed Assistant Surg. Kalloch and Assistant Surg. Gardner about this time.) The skin over these projections, especially the upper one, was darker than elsewhere over the tumor, and the pulsation, a heaving of the whole tumor, especially marked at the tops of the projections, the skin over which appeared thin and soft. The patient was put to bed and given veratrum viride, bromides to lessen his nervous excitement and apprehension, and morphine occasionally as the pain required.

January 9, 1893.—Skin over topmost projection is purple—almost black; looks as though it would ulcerate any day. Pain continuous. Bromides and morphine directed to be used as necessary.

January 11.—Skin over upper projection still more dark and a scab has formed. Bowels open; feels pretty fair except for pain in chest. At 4 p. m. blood began to seep from upper projection. Four narrow strips of adhesive plaster crossed over apex and bleeding stopped. Given tinct. verat. viride, ten drops at once and eight every two hours.

January 12.—More comfortable; continue verat. viride, eight drops every three hours. No special change until.

January 17.—At 3:38 a. m. aneurism burst. Bleeding continued for two or three minutes, a considerable amount of blood being lost, covering bed and floor, but flow stopped spontaneously by internal mass of fibrin plugging up the rent in skin. The rupture is seen to extend from suprasternal notch to a point below, not exactly ascertained. Patient given morphia and strict rest ordered. A mass of absorbent cotton applied over rupture. Death expected by return of hemorrhage at any moment. Pulse weak, mind wandering; patient would begin to speak and break off in the midst of a sentence, forgetting what he intended to say; 10:30, as much as possible of absorbent cotton cut away and the remainder saturated with $HgCl_2$ sol., 1-5,000, $HgCl_2$ gauze applied to prevent decomposition and odor, and a mass of absorbent cotton held in place by adhesive plaster, exercising pressure on aneurism. Ordered morphine to control pain. Three p. m., is resting easily. Nine p. m., contrary to strict orders, got up on a chair to evacuate bowels; said he could not use bedpan; no immediate bad effect; slight bleeding has evidently continued all day.

January 18.—A. m., is cheerful; pulse 80 and somewhat weak; has a good color; pain has returned; feels choked; takes milk regularly, 2 ounces every hour; slight nausea occasionally; no vomiting; bleeding still continues, but dressings not saturated; no bad odor; ordered bromide and cannabis indica; no morphine unless pain is excessive. P. m., has had a good day; no nausea nor vomiting; is quite comfortable.

January 19.—A. m., got up again last evening to have stool; no stool; no increase of bleeding; had a good night; no morphine; no pain; dressings changed, as now odorous; no bleeding.

January 20.—Had a good night.

January 21.—Bleeding began again, while patient was entirely quiet, at 7 a. m. He said only, "Call the nurse," and immediately became unconscious, expiring at 7:30.

Necropsy (nine hours after death).—A bulging tumor in center of upper part of chest in front, as large as the two fists, measuring 75 cm. in circumference, and beginning just below clavicles. The skin could only with great difficulty be dissected off. The aneurism was removed with the heart and thoracic aorta. The rent from which bleeding occurred was 3¾ cm. in length and filled with soft fibrin. The bulging of the aorta was found to begin just outside of the line of reflection of the pericardium. Between the heart and aneurism were numerous depressed circular cicatrices about 1 cm. in diameter. Considerable laminated fibrin in interior. The most of the first piece of the sternum and the second, as far as the junction with it of the second rib on each side, together with the ends of the first and second costal cartilages on each side, were found to have been eroded and absorbed. The valves of the heart were all competent; the left ventricle somewhat hypertrophied. No other parts examined.

COMMINUTED FRACTURE BONES OF FOREARM—RESECTION ELBOW JOINT—RECOVERY.

By Surg. HENRY W. SAWTELLE.

F. P.; aged 27 years; nativity, Norway; admitted to Boston Marine Hospital August 9, 1892. This seaman stated that he was injured a few hours prior to admission while riding in a passenger train with the right arm resting on a window sill, the elbow projecting slightly out of the window, but he was unable to give full particulars. It is probable, however, that he was struck by some foreign body projecting from a passing train. The injured arm was temporarily dressed by a railroad surgeon. When the patient arrived at the hospital the limb was very much enlarged and puffy, the swelling extending to the shoulder, and hence the nature and extent of the injury could not be ascertained precisely, but it was evident that the bones were fractured. There was considerable ecchymosis of the forearm and several large blisters on its surface. The limb was placed at rest on a pillow, bathed with soap liniment, and cold-water applications applied. Morphine sulphate was administered hypodermatically to relieve pain.

August 10.—Swelling much the same as on previous visit. Cold-water applications continued. Evening temperature, 38° C.; pain not so severe.

August 11 and 12.—More comfortable. Temperature a. m., 37.4; p. m., 38° C.

August 15.—Swelling somewhat subsided since last note. Loose fragments of bone now detected. The patient was placed under chloroform, and an incision, about 10 centimeters in length, beginning just above the olecranon, was made and carried downward parallel to the course of the ulnar nerve, and the following injuries were found, viz: Fracture of external condyle of humerus, olecranon process, coronoid process, and head of radius. Many spiculæ of bones were found impacted in the soft tissues and the parts were badly lacerated. The ulna was comminuted. The head of radius was broken across or cracked. The external condyle slightly fractured and two small fragments removed therefrom. Olecranon was dissected from its attachment and removed. All fragments being removed, the upper portion of ulna and the head of radius were sawn off with a chain saw. The parts were cleansed with warm distilled water, drainage tubes introduced, whole limb enveloped in sublimate gauze and absorbent cotton, and all covered with oil silk. Patient had slight rise of temperature for first week; dressings changed each day and wound irrigated with peroxide of hydrogen. He made an uninterrupted recovery, and was discharged with good use of arm on September 28, 1892.

CENTRAL NECROSIS OF TIBIA—TREPHINED AND SKIN GRAFTED—RECOVERY.

By Surg. HENRY W. SAWTELLE.

J. H.; aged 29 years; nativity, Pennsylvania; admitted to Boston Marine Hospital January 6, 1893; suffering from an ulcer of the right leg and necrosis of the tibia at about the middle of the bone. It appears from the history given by the patient that several years ago he received a contused wound of this leg, but the wound closed quickly, and caused him so little trouble that he did not consult a physician. No history of syphilis. Upon examination the bone was found to be somewhat roughened and softened. General course of tonics during January with local treatment of ulcer was apparently of no benefit.

February 11.—The patient was etherized and the bone exposed by an incision through soft parts over tibia, about 15 centimeters in length, having the ulcer for its center and extending about 5 centimeters above and below original skin lesion, and necrosed bone scraped and chiseled away, when it was found that osseous tissue was soft and friable. Evidently there had existed a bone abscess at this point. An inch trephine was applied and two buttons removed, all dead or soft bone gouged out, wound dressed with iodoform gauze, gutta-percha tissue, and absorbent lint, with a roller over all. Case did well, most of external wound closing over June 1, 1893; still a slight sinus left. Later skin broke down again, leaving quite a superficial lesion below, but healthy bone was gradually filling in where buttons were removed.

July 10.—Patient again etherized and bone exposed by incision; at this time only a limited amount of carious bone was found, and this superficial. This was scraped, and one or two small holes drilled into cavity to drain bone. Point of former trephining is filled out with soft-bone tissue; perfectly healthy wound; dressed as before.

July 13.—The skin lesion being large, skin was taken from arm and transplanted to leg wound by Dr. McIntosh. Six grafts were made at this time, and at first dressing, five days later, four were found to have taken root and were growing nicely.

July 25.—A second series of grafts were transplanted, three of which lived, took root, and the seven gradually joined the healthy skin at sides and center, closing wound.

This seaman has also been under treatment for an organic stricture of the urethra. Discharged, recovered, September 9, 1893.

FRACTURE SCAPULA AND RIBS—RECOVERY.

By Surg. HENRY W. SAWTELLE.

P. M.; aged 40 years; nativity, Ireland; admitted to the U. S. Marine Hospital, port of Boston, Mass., May 4, 1893. At this time he gave history of a fall from wharf, a distance of about 10 feet, striking on shoulder and back against a vessel lying there. He remained at Gloucester until the following day without treatment, after which he was transferred to this hospital, a distance of 30 miles, in a baggage car with no appliance and no comfort, except that furnished by the floor of the car. An examination at this time revealed a fracture of the inferior angle of the scapula and of fifth, sixth, seventh, and eighth ribs, right side, posteriorly; dressed by passing strips of adhesive plaster around chest so as to overlap one another, beginning below so as to retain the ribs in proper position and extending up sufficiently to include both pieces of the fractured scapula and retain them in position. A bandage was then applied over strips of plaster, and the shoulder and arm fixed by a roller. Complains of much pain in right side on respiration. This was controlled with morphine. On sixth day the dressings were removed and position of fractured bones found to be good. Dressings were again applied as before with adhesive strips and roller. This dressing remained until June 2, 1893, at which time the bones were found to be firmly united and the patient was discharged from treatment. By a close examination a small ridge could be detected at the line of fracture of scapula. On May 5 and 6 temperature registered 39° C.; with this exception he had no rise of temperature. He suffered considerably from cough at first, but this gradually disappeared. It is claimed by most authors that in fracture of the inferior angle of the scapula it is impossible to keep the lower fragment in place. Keen & White, in the American Text-Book of Surgery, page 299, remark that "the small lower fragment is displaced forward and upward by the attached muscles and even if it can be restored to its place it can not be kept there."

Hamilton states (Hamilton on Fractures and Dislocations, seventh American edition, page 237): "The scapula is usually broken by the fall of some heavy body directly upon the bone or by some severe crushing accident, by a fall upon the back, by direct causes alone, and by such causes as operate with great violence," and on page 241 he adds: "In the treatment of no other fracture, perhaps, have surgeons differed so widely as to the indications than in this."

In this case the fragments were coaptated and held together with adhesive strips carefully applied, the shoulder and arm being immovably fixed by Velpeau's bandage.

MULTIPLE INJURY—RECOVERY.

By Surg. HENRY W. SAWTELLE.

R. E.; aged 29 years; nativity, Norway; was admitted to the Boston Marine Hospital April 18, 1892, from the American bark *Antioch*. About one week prior to arrival in port this seaman fell from the foretopsail yard, striking on the fore hatch, a distance of 60 feet, receiving a compound comminuted fracture of the left tibia, just above the malleolus, with a double simple fracture of the fibula of the same leg; fracture of the inferior maxilla in three places, namely, at point of junction of body with ascending ramus on either side, the other at about 2 cm. from symphysis—the lateral fractures were oblique, the anterior fragments being at expense of the internal surface of the bone. There was also an injury of the head over mastoid process and contusions of the shoulder and arm. The leg was dressed at sea by the captain and kept in splints. Upon admission the wound was very foul; pectoral muscles emphysematous. After removal of several pieces of bone from the wound, the injured leg was immersed in a solution of carbolic acid, 1–120, for a few minutes, then irrigated with peroxide of hydrogen. The parts were then covered with iodoform and bichloride gauze and the limb placed in a fracture box. The fractured jaw was coaptated and maintained in position by wiring incisors and canine teeth together and by application of bandages. The clavicle was retained in place by a modification of the Velpeau bandage. The patient suffered at times for some weeks with a mild form of traumatic delirium, due to concussion of the brain, inflammation of the cerebral membranes being excluded as the cause thereof, there being no rise of temperature.

April 20.—A small piece of bone was removed from the wound. There is considerable swelling over mastoid process which is painful to the touch, and he has pain in head and ear. Hot douches to ear and hot-water applications externally give some relief.

May 3.—Plaster of Paris bandage applied to leg, windows being left for dressing wound and for pressure sores which had appeared prior to admission.

May 19.—Moderate discharge from ear; pain in same less severe; fibula united.

June 3.—Patient has improved generally; fractured clavicle and inferior maxilla united; discharge from ear about stopped; lymph glands of groin inflamed and painful.

June 19.—Small sequestrum removed from lower fragment of tibia.

July 23.—Several small splinters which had been impacted in the tissues have been removed from time to time with the dressings.

August 4.—A small sequestrum, 3 centimeters in length, removed. There has been a general slow improvement up to date.

February 4.—Under ether; tibia scraped for caries at point of fracture.

February 27.—While trying to walk on crutches fell and injured leg badly. Lower end of tibia close to joint destroyed to such an extent that there appears to be no prospect of saving the limb, and the patient so notified.

March 4.—Under chloroform the left leg was amputated at the upper third by circular operation.

March 20.—Patient still suffers more or less from headache, though he is doing well otherwise.

May 5.—Fell again yesterday while exercising on crutches, injuring stump and sustaining a contused wound of the forehead.

May 22.—Discharged recovered with good stump. Peg leg furnished.

THE UNITED STATES MARINE-HOSPITAL SERVICE.

By Surg. GEORGE W. STONER.

Detailed to represent the Marine Hospital Service at the International Congress of Charities, Correction, and Philanthropy, 1893. Read before the Section on "Hospital care of the sick, training of nurses, dispensary work, and first aid to the injured."

The Marine-Hospital Service is not quite as old as the Declaration of Independence, the adoption of the Constitution, or the establishment of the Government of the United States, but it has already reached a very respectable age and is fast approaching its centennial.

England had a marine hospital at an earlier date, the celebrated Greenwich Hospital, but this was essentially a military institution, established for the benefit of seamen of the royal navy. The Marine-Hospital Service of the United States was established, or rather provision for its establishment was made by act of Congress approved July 16, 1798. By this act Congress imposed a tax of 20 cents a month on every seaman employed on vessels of the United States engaged in the foreign and coasting trades, and out of the moneys collected by authority of this act, the President of the United States was authorized to furnish temporary relief to sick and disabled seamen, the moneys to be expended in the districts wherein collected. This, however, was amended the following year, March 2, 1799, by an act authorizing the expenditure of hospital money within any part of the State where collected, or in the State next adjoining. An amendment was also passed at this time extending the operations of the law so as to include the officers and seamen of the Navy.[1] The sentiment that led to the passage of the act establishing the Marine-Hospital Service was forcibly expressed by the Boston Marine Society as early as 1791; and in the House of Representatives, November 19, 1792, in his speech on the improvement of commerce, the Hon. Mr. Williamson said:

"Wherever it is probable that sailors may be sick there I would make provision for their support and comfort. Hospitals should be erected, or lodgings hired as the case may be, at every port of entry in the United States for sick and infirm seamen, where they may be properly attended during their indispositions. The money to be collected at the several ports as hospital money should be expended at such port and no other place, under the care of such person as may be designated for that purpose. Let a small deduction be made from the wages of every seaman to be paid at the several ports of entry for their use. I have mentioned a deduction from their wages because this mode of raising money would probably be more acceptable, and because it is the most equitable tax that can be levied."[2]

Hospital treatment or its equivalent was given to sick and disabled seamen by the Marine-Hospital Service in Boston as early as 1779, the year following the establishment of the Service. The first marine hospital owned by the Government and established under the act of 1798 was located at Washington Point, Norfolk County, Virginia. It was purchased by the United States in 1800. Three years later, in 1803, a marine hospital was completed for the port of Boston. It was located at Charlestown, on the Mystic River, an appropriation of $15,000 having been made for the purpose by act of Congress approved May 3, 1802. By this act the money collected for the benefit of sick and disabled seamen was constituted a general fund; and provision was also made for the establishment of the Marine-Hospital Service at New Orleans (not then belonging to the United States). The following is the text:

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[1] In the year 1811 separate hospitals were established for the Navy.
[2] Hamilton, Appleton's Cyclopædia, 1879.

"That the moneys heretofore collected in pursuance of the several acts for the relief of sick and disabled seamen, and at present unexpended, together with the moneys hereafter to be collected by authority of the before-mentioned acts, shall constitute a general fund, which the President of the United States shall use and employ as circumstances shall require for the benefit and convenience of sick and disabled seamen: *Provided*, That the sum of $15,000 be, and the same is hereby, appropriated for the erection of an hospital in the district of Massachusetts.

"SEC. 2. The President is authorized to cause such measures to be taken as, in his opinion, may be deemed expedient for providing convenient accommodations, medical assistance, necessary attendance, and supplies for the relief of sick and disabled seamen of the United States who may be at or near the port of New Orleans, in case the same can be done with the assent of the government having jurisdiction over the port.

"SEC. 3. Required masters of boats, rafts, etc., going to New Orleans down the Mississippi to render true accounts of the number of persons employed on board, and imposed a tax of 20 cents a month for every person so employed, which sum the master was authorized to retain out of the wages of such person.

"SEC. 4. Authorized the President to appoint a director of the Marine Hospital at New Orleans.

"SEC. 5. Authorized the admission of sick foreign seamen into marine hospitals of the United States upon certain conditions, and fixed the rate of charge at 75 cents a day."

The following letters from American State Papers quoted by Supervising Surg. Gen. Hamilton in a paper read at the annual meeting of the National Board of Steam Navigation, held at Cairo, Ill., several years ago, also in his article in Appleton's Annual Cyclopædia, show, as he says, "the state of affairs which rendered action on the part of Congress necessary."

NEW ORLEANS, *August 10, 1801.*

"A great number of American citizens, especially seamen and boatmen from the Ohio, die here yearly for want of a hospital, into which they might be put and taken care of, not that they are refused admittance into the Spanish Poor Hospital, but that building is by much too small for the purpose.

"No public house of any reputation will take them in, and consequently they lie in their ships or boats or get into wretched cabins, in which they die miserably, after frequently subjecting the humane among their countrymen to much trouble and expense. Will not this be an object, sir, worthy the attention of the Government of the United States? And might not a fund be easily established for the preservation of these poor people by imposing a light tax upon every vessel and boat that comes in, as well as upon every seaman and boatman? About 200 vessels have entered here from sea during the twelve months past, and allowing 8 men only to each, it makes 1,600. Perhaps from 350 to 400 boats have come down from the Ohio, etc., during the same time, and allowing 4 men to each, it would make about an equal number of men; a small sum from each, added to something from every vessel and boat would probably produce a capital equal to the exigency.

"EVAN JONES."

E. M. Day, esq., in a letter addressed to the Secretary of State, dated November 8, 1802, said:

"It will readily occur to you, sir, that thousands of our fellow-citizens must soon be employed in navigating the ships and boats which must ever be used as the means of transporting these commodities (those of the western country) from one place to another. Now, sir, when we take into consideration the climate and season of the year when this commerce must be carried on, the risk to our citizens must be multiplied in a high degree. It is well known that the western rivers can not be conveniently navigated into the Mississippi until the breaking up of the frost in the spring of the year. It is then that the great river begins to rise, and it generally remains up until July. The great distance and unavoidable impediments naturally in the way always carry over these commercial transactions to so late a period as to leave the great bulk of those employed in them at or about New Orleans in the sickly season of the year, which, in that low, flat, unhealthy southern climate, is fatal in the extreme to the strong, robust constitutions of our western brethren; hence, many of them fall victims to climate and disease, leaving families and friends at a great distance from them. The want of proper accommodations for sick and infirm seamen and boatmen at New Orleans is another very serious inconvenience our poorer class of fellow-citizens are much subjected to in that place. It is really pitiable to see such numbers of distressed objects as sometimes present themselves to view in the sickly months, who have been left to shift for themselves after their employers have made their markets. Something like an hospital establishment, to be superintended by American physicians, would go a great way to alleviate the distresses of those useful men. I mentioned American physicians because our people are strongly prejudiced against those of the Spanish faculty, and generally not understanding the language they derive little or no benefit from them."

The first U. S. marine hospital at New Orleans was not erected until a number of years later, but provision was made for the care of sick and disabled seamen in the local hospitals as early as 1804, and a physician appointed to look after their welfare, same as had been done originally in Boston, and which is now (since the reorganization of the Service) the custom at the smaller ports of the country, that is to say, where the Service is not large enough to warrant the assignment of a regular medical officer or the establishment of a station of the first class.

For a number of years after the establishment of the Service the expense had to be met out of the fund created by the tax upon seamen, and as the amount collected was not sufficient to meet the demands of the Service, restrictions were from time to time necessary to keep up the expenditures within the available fund. Chronic and incurable cases were excluded from the benefits of the Service and in no case was relief allowed for a longer period than four months.

Patients in some ports were cared for in local hospitals and were farmed out to the lowest bidders, and in places where there were no hospitals "medical charges were restricted to 20 cents a day, with boarding, lodging, nursing, and washing, at $2.50 a week." For districts south of the Potomac an addition of 20 per cent was allowed. The hardships attending the life of seamen and the administration of the fund for their relief from this period, were set forth by the late Supervising Surgeon-General Woodworth in the following language (annual report, 1872):

"It was claimed that the fund was to be considered as auxiliary to the provision made by the municipal authorities, rather than as a full compensation for the relief which was due to the wants of sick and disabled seamen. In view of the inadequacy of the fund a more liberal ruling was impracticable. The administration of the fund on this principle worked the greatest hardships in the new cities and towns which sprang up on the banks of the western lakes and rivers, where few accommodations were to be had for the care of sick strangers left helpless upon their shores. Those who engaged in the commerce of the western rivers were subjected to climatic changes that were to them very pernicious. The numbers who perished in the long descending voyages of the flat-bottomed boats which left the upper waters of the Mississippi and its tributaries in summer and early autumn to find a market for the fruits of their toil at New Orleans were very great. Nothing was more common than for two out of five hands, who generally managed those boats, to die, and it sometimes happened that the whole crew perished from disease, and that the boat with its cargo was left deserted. The steamboats ascending the Mississippi and its tributaries brought up every year a great number of deck passengers, chiefly the sons of farmers returning from their flatboat voyages, many of whom died on board, while others were left on shore at the river towns, helpless and among strangers. The cholera epidemic of 1832 and 1834 added greatly to the catalogue of their ills. Moved by a feeling of common humanity for the large class of our young men who had surrendered the endearments of a life spent at home and united their fortunes with strangers by embarking in the more daring, precarious, and toilsome interests of commerce, a pursuit more than most others beset with temptations to risk of health and life, to recklessness of character and insensibility to future wants, sensible also of the sufferings attendant upon such an improvident life, whole communities, both on the seaboard and in the interior districts, petitioned Congress for additional appropriations and the enactment of laws providing increased facilities for the relief of this unfortunate class. From one port it was reported that no better place could be offered to sick seamen than the warehouses and the deserted tenements along the wharf; from another that they had to be sent to the city almshouse, which was also connected with the penitentiary for common vagrants and petty convicts; and from another the sad story was told that seamen sick with various diseases, cholera, smallpox, etc., were often forced promiscuously into the same chamber, where the dying and the dead were alike neglected."

Beginning in Boston in 1799, the Service was soon extended to the principal ports along the Atlantic coast, and gradually, as Congress made special appropriations for the same, marine-hospital buildings were erected at other ports than those already named. The expenses attending the erection of the original hospitals at Norfolk and Boston were defrayed from the Marine-Hospital fund (the tax collected from seamen for their relief when sick and disabled) in accordance with the law of 1798, which also provided "that when there should be a sufficient surplus after defraying the expenses of temporary relief to seamen, it should be used in erecting marine hospitals." This provision was made probably in view of another provision of the same act, which authorized the President to receive donations of personal property or real estate, and which contemplated a surplus. During the earlier years of the Service there was occasionally a small surplus, more frequently a shortage; and as years went on the expenses were greatly increased and entirely out of proportion to the increase of the collections, and Congress was called upon to make necessary appropriations to meet the difference. These appropriations varied in amounts from $1,000 to $275,000 a year, and up to 1873, when the last appropriation was made, amounted to the sum of $4,830,994.34. The collections during the same period footed up the amount of $7,096,968.89, making a grand total of $11,927,963.25, while the expenditures were $11,639,934.66, leaving at the close of the year 1873 a balance in favor of the fund amounting to $288,028.57.

In the year 1837 (act approved March 3, 1837) Congress appropriated $75,000 for the erection of a marine hospital in the city of New Orleans and for the purchase of lands on which to erect said marine hospital. The President was also authorized to select and cause to be purchased for the use and benefit of sick seamen, boatmen, and all other navigators on the Western rivers and lakes suitable sites for marine hospitals: *provided*, that the number thereof shall not exceed for the Mississippi River, 3; for the Ohio, 3, and for Lake Erie, 1. By this same act the collection of hospital tax was suspended for one year, and instead of said tax the sum of $150,000 was appropriated. A later act (August 29, 1842) confirmed the act of 1837 and authorized the purchase of sites for marine hospitals at Natchez, Miss.; Napoleon, Ark.; St. Louis, Mo.; Paducah, Ky.; Louisville, Ky.; Pittsburg, Pa., and Cleveland, Ohio. An appropriation for the erection of the first marine hospital in Chicago was made by act of Congress approved August 3, 1848, and was located on land adjacent to old Fort Dearborn. The second, the present hospital in Chicago, was erected under authority of act of Congress dated June 20, 1864, and located on the lake shore, about 5 miles north of the harbor. The land was not purchased, however, until 1867. The building was completed and ready for the reception of patients in 1873, and was pronounced the "finest structure of its kind in the country, and far superior to the marine hospitals hitherto constructed." Before this building was completed, however, the Supervising Surgeon-General (the late Dr. Woodworth) "believed that one-fourth of the amount required to complete the building and fit it for occupation would have been sufficient to construct a hospital which would meet the wants of the Service equally well. He then evidently had in mind the pavilion which was subsequently adopted and has been continued up to this time as the style of marine-hospital construction. He was in "favor" of "constructing all the hospitals of wood and destroying them after ten or fifteen years, both as a sanitary and an economical measure, and building new ones in their stead." Fire is no doubt the best and surest antiseptic, but in these days of medical progress less heroic measures answer every purpose, and if buildings are properly constructed, drained, and ventilated the torch need never be applied.

The erection of the marine hospital at Detroit, Mich., was authorized by an act of Congress dated August 4, 1854. This same act also made appropriations for the construction of marine hospitals at Burlington, Iowa, Pensacola, Fla., and for the second hospital at New Orleans. The marine hospital at Detroit is a 3-story and basement solid brick building, constructed somewhat after the Mills style of architecture, except that the ground plan is in the shape of the letter T instead of H, and differs in this respect from all, or nearly all, other marine hospitals, the plans of which were drawn by Robert Mills, architect, in the year 1837, and followed by the Government, without material change, for a period of about thirty years, or until the construction of the imposing structure previously referred to, designed by the late A. B. Mullet, and located in this city (Chicago).

The Marine-Hospital Service on the Pacific coast was first established at San Francisco in 1851 (the contract system), and a U. S. marine hospital was in use at that port in 1854. It was large and well built, but was injured by an earthquake in 1868. The contract system was then resumed and continued until the completion of the present pavilion hospital. Besides the places already named, hospitals were located before the reorganization of the Service at Mobile, Ala.; Charleston, S. C.; Portland, Me.; Ocracoke, N. C.; Evansville, Ind.; Vicksburg, Miss.; St. Marks, Fla.; Burlington, Vt.; Wilmington, N. C.; Galena, Ill., and Port Angeles, Wash. Most of these buildings were large, substantial structures, erected at great expense, and some of them were sold afterwards at a great reduction, especially those built at places where they were not needed at all, as for example at Paducah, Ky.; Burlington, Iowa; Galena, Ill., and Burlington, Vt. During the war of the rebellion many of the marine hospitals, North and South, were used as military hospitals, and the hospitals at Norfolk and Boston were in similar use during the war of 1812.

The Marine-Hospital Service was reorganized in pursuance of an act of Congress approved June 29, 1870.

"An act to reorganize the Marine-Hospital Service and to provide for the relief of sick and disabled seamen.

"*Be it enacted, &c.*, That from and after the first day of August, eighteen hundred and seventy, there shall be assessed and collected by the collector of customs at the ports of the United States from masters or owners of every vessel of the United States arriving from a foreign port, or of registered vessels employed in the coasting trade, the sum of forty cents per month for each and every seaman who shall have been employed in said vessel since she was last entered at any port of the United States, which sum the said master or owner is hereby authorized to collect and retain from the wages of said employees.

Section 4 of this act required that "all moneys received or collected by virtue of this act shall be paid into the treasury like other public moneys, without abatement or reduction," and appropriated all moneys, so received, for the expense of the Marine-Hospital Service, and to the credit of the marine-hospital fund.

SEC. 5. That "the fund thus obtained shall be employed, under the direction of the Secretary of the Treasury, for the care and relief of sick and disabled seamen employed in registered, enrolled, and licensed vessels of the United States."

SEC. 6. "*And be it further enacted,* That the Secretary of the Treasury is hereby authorized to appoint a surgeon to act as supervising-surgeon of Marine-Hospital Service, whose duty it shall be, under the direction of the Secretary, to supervise all matters connected with the Marine-Hospital Service and with the disbursement of the fund provided by this act, at a salary not exceeding the rate of two thousand dollars per annum, and his necessary traveling expenses, who shall be required to make monthly reports to the Secretary of the Treasury."

The office of supervising surgeon was first filled in April, 1871, by the appointment of Dr. John M. Woodworth, of Illinois. The work of reorganization was commenced at once, and had so far progressed by the end of the fiscal year 1872 that the supervising surgeon (Dr. Woodworth), in his annual report for that year, was enabled to show a marked increase in the facilities for affording relief, a considerable decrease in the per diem cost for the care of each patient, and an actual saving to the Government of $56,819.31, as compared with the preceding year. In the original work of reorganization, or rather in anticipation of the law reorganizing the Service and before a supervising surgeon was appointed, the Secretary of the Treasury received valuable aid from Surg. John S. Billings, of the Army (the distinguished chairman of this section). Twelve thousand three hundred and two sick and disabled seamen were furnished hospital relief during the year 1872, and by a system of out-door or dispensary relief inaugurated this year, 854 seamen were furnished medicine, making a total number of 13,156. It need hardly be added that the Service soon became self-sustaining and that no appropriation was received or required after the year 1873, except for the erection of new hospital buildings. The work of reorganization had now fairly begun. Candidates, after passing a satisfactory examination before a board of surgeons, were appointed surgeons and assistant surgeons by the Secretary of the Treasury on the recommendation of the supervising surgeon. Hospitals were divided into two classes, viz: Class 1, U. S. marine hospitals; class 2, local hospitals, where seamen were received at rates authorized by the Department.

Provision was also made for the care of sick and disabled seamen at ports where there were no hospitals. One medical officer was assigned to duty at each hospital (Class 1) as surgeon in charge, and when an assistant surgeon was also assigned at the same station one of the two was required to be on duty at the custom-house during business hours to examine applicants for admission to hospital, to issue a permit if necessary, to prescribe for cases not requiring treatment in hospital, and at the same time to guard the Service against the irregularities and abuses which had formerly crept in and made the reorganization necessary. At the hospitals of Class 2, where the service was large enough to warrant the assignment of a medical officer, his duties were essentially the same as if on duty at the custom-house office or dispensary of a station of Class 1; and he was also required to inspect the hospitals where seamen were admitted, and to supervise all matters relating to the service at the port. At the smaller ports the customs officer was authorized to provide for the care of sick seamen by arrangement with a local physician, or to furnish transportation to the nearest hospital where provision was made for relief. The surgeon in charge of a marine hospital was given authority over all officers and employés of the hospital, and he was empowered to enforce regulations for the management of the hospital, subject to the approval of the supervising surgeon. He was held responsible for the proper and economical administration of the hospital under his charge, and for the care and preservation of the building, furniture, and stores, but he was not entitled to any stores (subsistence supplies) for himself. He was required, as he is now, to supply subsistence for himself, family, and household help. The steward and other employés were, as they are now, subsisted by the hospital. The compensation of all officers and employés of the Service (except the supervising surgeon, whose salary was fixed by act of Congress) was fixed by the Department.

Regulations covering the foregoing and all other requirements of the Service and duties of medical officers were issued in book form during the latter part of the year 1873, and these regulations have served as the basis and model upon which all subsequent regulations, made necessary by later acts of Congress or Department decisions, have been framed. Within three years after its reorganization the work of the Service began to attract attention from abroad. The London medical journals were profuse in their praise of this peculiarly American institution. The Lancet recommended that "a leaf be taken out of the book of the Marine-Hospital Service of the United States," and remarked that "Our transatlantic neighbors, ahead of us in many things, are most decidedly in advance of the old country in providing for the care of their sick sailors."

In the year 1875, just four years after the reorganization of the Service, Congress enacted (act approved March 3, 1875): "That hereafter the salary of the Supervising Surgeon-General of the United States Marine-Hospital Service shall be paid out of the marine hospital fund, at the rate of $4,000 per year; and the Supervising Surgeon-General shall be appointed by the President, by and with the advice and consent of the Senate." In another act, approved the same day, provision was made for the care of seamen of foreign vessels at such rates and under such regulations as the Secretary of the Treasury may prescribe.

This act also provided for the increase of compensation before mentioned for the Supervising Surgeon-General. It was during the fiscal year, too, that the Department issued the first circular letter to United States officers, defining their duties with reference to quarantine and public health. The medical officers of the Marine-Hospital Service were especially directed to inform themselves fully as to the local health laws and regulations based thereon, and in force at their respective ports and stations, and strict compliance with such laws, and prompt assistance in the enforcement of the same when requested by competent authority, were enjoined. The quarantine law under which these instructions were issued was passed as far back as 1799 (R. S., 4792). It was during the year 1875 also that the first marine hospital of the pavilion style of architecture was opened. This hospital is located in San Francisco, and is now in active operation. Similar hospitals have since been built and are in use at New Orleans; La., Memphis, Tenn.; Cincinnati, Ohio; St. Louis, Mo.; Cairo, Ill.; Baltimore, Md., and Evansville, Ind.

Hospitals of the older or block style are still in use at Boston, Mass.; Portland, Me.; Louisville, Ky.; Wilmington, N. C.; Mobile, Ala.; Cleveland, Ohio, and Detroit, Mich. The present hospital at New York (leased from the Marine Society) is also an old-style building. Some of the old block hospitals have had bad histories, but they are now, thanks to improved plumbing and better administration, in good sanitary condition, and the results of treatment, medical and surgical, compare very favorably with the best results in the pavilion hospitals. The sanitary condition of the old hospital at Detroit, for example, was so bad only a few years ago that the medical officer then in charge recommended that permission be granted to admit and treat all surgical cases in one of the local hospitals or in rented rooms, so as to avoid the invariable complication of erysipelas. Suffice it to say that for the last four years not a single case of contagious or infectious disease or wound infection of any kind originated in this hospital, notwithstanding the fact that more surgical operations have been done than ever before. And this is practically the report of improvement at all the older hospitals where modern methods and "the next thing to Godliness" is the rule.

It is not the purpose of this paper to discuss the general question of hospital construction, nor by any means to discourage the erection of pavilion marine hospitals. The pavilion plan is probably the best, all things considered, that has yet been devised. But if the older style hospitals were as bad to-day as they were reported to be when the pavilion was introduced, they should be destroyed forthwith. As a matter of fact they are not so bad, and as before intimated, results considered, they must now be pronounced good.

Differences of opinion as regards the relative merits of different style hospitals are to be expected. Surg. John Vansant, who has had extensive experience in hospital work, expressed his views a number of years ago as follows:[1]

"I have to say that I was once a strong advocate of the pavilion plan for all hospitals, but I have now modified my views, though I have not positively decided what other plan I would substitute for the pavilion; in time of war the pavilion plan is undoubtedly the best, for then there are as many nurses and other attendants, as well as officers, money and supplies of all sorts as can be wished for, but in times of peace, and for a civil hospital, I think the pavilion plan is more expensive and more difficult to administer. It would be less comfortable in a cold climate or in winter, and on the score of healthfulness or ventilation, etc., I doubt if it has any advantages over a two or three story hospital. I think, as a general thing, the wards of our hospitals are too large; I prefer a greater number of smaller rooms."

A few days ago I addressed a letter to Surg. Henry W. Sawtelle, of the U. S. Marine-Hospital Service, requesting his opinion on the merits of pavilion hospitals as compared with the block style of marine hospitals. The following is a copy of his remarks sent to me by return mail:

"As hospitals are for the care and treatment of the sick and wounded, the merits of the various hospitals should be decided upon the results of treatment as shown by their records, assuming, of course, that the administration and care of the hospitals have been careful and efficient. Unfortunately, I have no such data at hand, and I shall therefore content myself by giving my views, based upon experience at the different hospitals, without reference to statistics. I have served at one pavilion hospital, the one at San Francisco, and at several of the older or block style, namely, St. Louis, New York, Detroit, Portland, Me., and Boston. Ventilation for these hospitals is obtained mainly through the windows and doors, and the appointments generally are below the standard of requirements of hospital buildings according to modern ideas. From these remarks it will be seen that both styles are open for improvement. In regard to the old hospitals of the Service, their bad histories are matters of record—outbreaks of erysipelas, gangrene, and pyæmia were frequent prior to the reorganization of the Service in 1871 and for some time thereafter. Such a record was undoubtedly due very largely to the fact that for many years the Marine-Hospital Service had been under control of the politicians, and political doctors, who happened to be friends of the collectors of customs or political allies of sufficient importance to attract the attention of the appointing power, were the medical heads of the hospitals, who paid but little attention, comparatively, to their duties, while the collectors of customs were the custodians of the hospital buildings, and all matters pertaining to the Service passed through their hands for approval or disapproval. It is not wonderful, then, considering such a history, that at the date of reorganization in 1871 the marine hospitals throughout the country which were of the block plan were found to be in such an infected condition that the result of treatment was unsatisfactory and the percentage of deaths large. Cleaning up old hospitals means prevention of disease in the same sense that proper environment and personal cleanliness mean prevention of cholera. Hence it will be understood that after a general cleaning and repairing of the old hospitals it was observed by the medical officers that the success attending their treatment of patients increased correspondingly. After about twenty years' service in these hospitals, including three and one-half years at the San Francisco hospital, which, as before stated, is of the pavilion plan, my experience in relation to the success of treatment of patients in the old-style hospitals, as compared with the pavilion hospital, is about the same. For example, at the Boston hospital, which was built in 1859 and which has a bad history, not a case of erysipelas has developed in the wards during the past two years, and no complications have succeeded surgical operations. Primary union after operations is a common occurrence, and I may say that the same is true at other hospitals of similar design where I have served. No greater success was observed at the pavilion hospital. In conclusion, I may say that for economical reasons and convenience of management I am in favor of pavilion hospitals for the Service, though I am free to admit that in case expense is no object, hospitals constructed on block plan and provided with proper ventilation and all modern appointments, would meet all the requirements for the successful treatment of the sick and injured in as large a measure as upon any other plan."

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[1] Annual Report Marine-Hospital Service, 1883.

Supervising Surgeon-General John M. Woodworth, who had been chief officer of the Service from its reorganization, died in the month of March, 1879, and Surg. John B. Hamilton, who had been ordered to Washington for temporary duty in charge of the bureau during the illness of the chief officer, was soon thereafter appointed by President Hayes to the office made vacant by the death of Dr. Woodworth.

In 1879 the regulations governing the Service were revised. Several of the provisions contained in the original regulations of October 1, 1873, had since the latter date been repealed or modified by circular, etc., and new paragraphs were added in conformity with the law passed in 1875.

During the year 1878 a law was passed establishing a national quarantine, and the Supervising Surgeon-General of the Marine-Hospital Service, under the Secretary of the Treasury, was empowered to frame regulations governing quarantine, but no appropriation was made to carry the act into effect. During the same year the terrible epidemic of yellow fever occurred in the Mississippi valley, and in February following Congress passed another law (act approved February 3, 1879) establishing a National Board of Health. The latter act embodied all the essential provisions of the former, but changed the executive authority by substituting a board (national board) composed of seven members, and carried with it a large appropriation. The act of 1879 was limited to a period of four years, and upon its expiration the law of 1878 was revived and became operative by means of the contingent fund appropriated by Congress to be expended by the President of the United States, in his discretion, in preventing the spread of epidemic diseases and in maintaining quarantine at points of danger. This discretion was used by the President as above indicated, and the work contemplated by the appropriation act was performed through the agency of the Marine-Hospital Service in aid of State and local boards of health, and in accordance with the act of April, 1878.

It is hardly necessary to add that the precedent thus established has been followed up to this time, or until the passage of the recent act (approved February 15, 1893), "granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service."

In thus briefly reviewing the history of the national quarantine service and the provisions contained in the several acts, the remarks of the late Supervising Surgeon-General Woodworth must not be forgotten. After reading a paper before the International Medical Congress in Philadelphia in 1876 (two years before the enactment of the law of 1878), he said:

"From what has preceded, the following conclusions appear to be justified: (1) The supervision of ocean travel ought to be directed to securing good sanitary conditions for vessels at all times, out of, as well as in, port. (2) A system of port sanitation should be adopted and administered for each country or place separately, and should be modified in particular cases by taking into account the liability of the port to infection, the period of incubation of the disease, the length of time consumed in the voyage, and the measures enforced by the vessel en route. (3) In some countries the detention of passengers and crews of ships hailing from infected ports is warranted, but for such time only as is necessary to complete the period of incubation of cholera or of yellow fever, counting from the date of departure from an infected port or of landing from an infected vessel. In no instance should passengers or sailors be held for observation on board an infected vessel, and such vessel should not be detained beyond the period required for inspection and for thorough disinfection and cleansing. (4) Recognizing the fact that the morbific causes of infectious diseases may sometimes elude the most vigilant sanitary supervision of shipping, the importance of wisely-directed internal sanitary measures can scarcely be overestimated. (5) As far as America is concerned, it is desirable that prompt and authoritative information should be had of the shipment of passengers or goods from districts infected with cholera or yellow fever, thereby insuring the thorough disinfection of infected articles. (6) The endemic homes of cholera and yellow fever are the fields which give the greatest promise of satisfactory results to well-directed and energetic sanitary measures, and to this end an international sentiment should be awakened, so strong as to compel the careless and offending people to employ rational means of prevention."

These views of Dr. Woodworth were recognized in the act of 1878. In fact, the said act is sometimes called the Woodworth law. But as before indicated, the law of 1879 changed the executive authority from the Supervising Surgeon-General to the National Board. Under these laws national quarantine stations were established at several points on the Atlantic coast, and inspection stations at various times, when necessary, were maintained at points of danger on the frontier. Sanitary inspectors were also stationed at Havana and Vera Cruz to give prompt notification relative to the sailing of vessels bound for the United States, so as to aid in the prevention of the introduction of yellow fever.

At London and Liverpool inspectors were appointed to give timely information of the shipment of Egyptian rags or of any other articles sent through those ports from infected localities. Inspectors were also appointed at the principal European ports to inspect vessels and emigrants bound for the United States.

In 1885 the regulations of the Marine-Hospital Service were again revised. A section for the government of national quarantines was added, and the whole was approved by the Secretary of the Treasury and by the President of the United States. In January, 1886, Supervising Surg. Gen. Hamilton resumed the publication of the Weekly Abstract of Sanitary Reports, as required by the act of 1878. During the same year, or the year preceding, he recommended "that the national quarantine stations be made permanent, and that they be equipped with all the necessary appliances known to modern sanitary science for the treatment of infected vessels and their cargoes, so that not only may immunity from the importation of contagious diseases be secured at those stations, but such security be had with the least possible obstruction to commerce." In 1887 he recommended the establishment of a station on the Pacific coast. In 1888 a law was passed (approved August 1) making the national quarantines on the Atlantic and Gulf coasts permanent institutions, and providing for the establishment of three stations on the Pacific coast. An appropriation of $500,000 was made to carry out the purpose of this act. In 1890 an act was passed to prevent the introduction of contagious diseases from one State to another and for the punishment of certain offenses.

In June, 1891, Supervising Surg. Gen. John B. Hamilton, under whose administration of the Marine-Hospital Service all the national quarantine work up to date had been performed (except during the active period of the National Board of Health), resigned his commission as Supervising Surgeon-General, and Surg. Walter Wyman, then on duty in the bureau as chief of the quarantine division, was appointed by President Harrison to be Supervising Surgeon-General in place of John B. Hamilton, resigned. Dr. Hamilton was at the same time, and by his own request, reappointed by the President to be a surgeon in the Marine-Hospital Service, and assigned to duty at Chicago, Ill. The latest and most comprehensive legislation affecting the Marine-Hospital Service, and, of course, through it the national quarantine service and the country at large, is contained in the act (approved February 15, 1893) granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service. Under the provisions of sections 2, 3, and 4 of this act, medical officers of the Marine-Hospital Service have been detailed to serve, and are now on duty, in connection with the consulates at various foreign ports, and from them all necessary information is received relative to the sanitary condition of vessels, cargoes, crews, and passengers, about to depart for the United States.

By this means the ordinary consular bill of health is made to be a certificate of actual observation by a responsible officer whose sole duty is to aid in the prevention of the introduction of contagious diseases into the United States.

New quarantine regulations have been framed by a board of officers under the direction of Supervising Surg. Gen. Wyman, who convened the board for the purpose; and the said regulations have been promulgated by the Secretary of the Treasury. A very large appropriation is now available and the Supervising-Surgeon-General, under the direction of the Secretary of the Treasury, is making extensive improvements at all stations, and in various ways increasing the efficiency of the Service. At New York, Boston, and New Orleans the maritime quarantines are owned and operated by the State or municipality, but the law requires the Supervising Surgeon-General, under the direction of the Secretary of the Treasury, to cooperate with and aid State and municipal boards of health in the execution and enforcement of the rules and regulations of such boards and in the execution and enforcement of the rules and regulations made by the Secretary of the Treasury to prevent the introduction of contagious or infectious diseases into the United States; * * * and also requires that all rules and regulations made by the Secretary shall operate uniformly and in no manner discriminate against any port or place * * * and at such ports and places, within the United States, where the quarantine regulations exist under the authority of the State or municipality which, in the opinion of the Secretary of the Treasury, are not sufficient to prevent the introduction of such diseases into the United States, the Secretary shall, if in his judgment it is necessary and proper, make such additional rules and regulations as are necessary * * * but if the State or municipal authorities shall fail or refuse to enforce said rules and regulations the President shall execute and enforce the same, * * * and may detail or appoint officers for that purpose.

It is to be hoped that the relations between the national and the State quarantine will always remain within the bounds of cooperation and aid and that both may strive how best to work and agree, until such time as the combined efforts may result in better understanding, and above all in the accomplishment of the objects sought to be accomplished by modern quarantine. An observance of the minimum requirements of the regulations will be a sufficient guard against any conflict of authority. Medical officers of the Marine-Hospital Service are also, under the laws of March 3, 1891, and March 3, 1893, required to serve as medical inspectors in the immigration service. The proper performance of this duty must also of necessity result in valuable aid to public health.

From the foregoing compilation and remarks it will be observed that the Marine-Hospital Service covers a large field. The Service proper is a peculiarly American institution. It was originally established and is at present maintained for the benefit of the sailors of the mercantile marine. From its beginning in 1798 until 1884 every seaman employed on a vessel of the United States contributed to its support by the payment of a small tax, at first at the rate of 20 cents a month, and later 40 cents a month, while actually employed. In 1884 by an act of Congress the hospital tax was abolished and in its stead the tonnage tax, received from foreign vessels, was made available for the ordinary expense of the service (for the care and treatment of sick and disabled American seamen). In addition to the treatment in hospital a system of outdoor or dispensary relief was inaugurated when the Service was reorganized, and this has gradually increased year after year until there are now about 40,000 cases furnished outdoor relief annually, while the hospital cases number about 16,000. During the year 1892 there were 37,588 of the former and 16,022 of the latter.

The physical examination of candidates for appointment in the Revenue-Cutter Service, and of officers for promotion in that Service, are made by medical officers of the Marine-Hospital Service. Applicants for employment as keeper or surfman in the U. S. Life-Saving Service are also examined as to their physical condition and, if appointed, instructed in methods for the resuscitation of the apparently drowned. Pilots must also pass an examination before a medical officer of the Marine-Hospital Service as to their ability to distinguish the colored lights used at sea.

The regular corps of the U. S. Marine-Hospital Service consists of the Supervising Surgeon-General, surgeons, passed assistant surgeons, assistant surgeons, acting assistant surgeons, hospital stewards, and hospital attendants. The Supervising Surgeon was made a commissioned officer in 1875 and the title of his office was changed to Supervising Surgeon-General. In 1889 statutory provision was made for the appointment of all subordinate medical officers, the requirements being essentially the same as had previously governed by regulation and under which an average of about 80 per cent had been rejected. The following is the text:

"Medical officers of the Marine-Hospital Service of the United States shall hereafter be appointed by the President, by and with the advice and consent of the Senate; and no person shall be so appointed until after passing a satisfactory examination in the several branches of medicine, surgery, and hygiene before a board of medical officers of the said Service. Said examination shall be conducted according to rules prepared by the Supervising Surgeon-General and approved by the Secretary of the Treasury and the President.

SEC. 2. "That original appointments in the Service shall be made to the rank of assistant surgeon; and no officer shall be promoted to the rank of passed assistant surgeon until after four years' service and a second examination as aforesaid; and no passed assistant surgeon shall be promoted to be surgeon until after due examination: *Provided*, That nothing in this act shall be so construed as to affect the rank or promotion of any officer originally appointed before the adoption of the regulations of 1879; and the President is authorized to nominate for confirmation the officers in the Service on the date of the passage of this act."

Medical officers are subject to change of station as the exigencies of the Service may require, and are not allowed to remain at any one station for a longer period than four years, unless specially authorized by the Department. Acting assistant surgeons are appointed by the Secretary of the Treasury upon the recommendation of the Supervising Surgeon-General. They are not usually subject to change of station. Hospital stewards are appointed to the general service by the Secretary of the Treasury, after passing a satisfactory examination before a medical officer of the Service. Hospital attendants are employed by the medical officer in charge of a station, subject to approval of the Department. The different details for attendants are engineer, fireman, cook, nurse, watchman, night nurse, ambulance driver, gardener, launderer or laundress, general-service men in dining room and about buildings and ground, and dispensary attendant. The Marine-Hospital office or dispensary is usually located in or near the custom-house. Medical officers are required to visit patients in hospitals at least once a day, and oftener, if necessary, to make a general inspection at least once a week, and to supervise all matters pertaining to the Service of the station of which they are in command. At the larger stations two or more medical officers are usually on duty; at the smaller hospital stations only one; and at stations where there are no hospitals belonging to the Government, but where the Service is large enough to warrant it, one medical officer is assigned to duty and placed in charge of all Service matters at the port. At the still smaller stations acting assistant surgeons are appointed; they are also sometimes designated sanitary inspectors, if required for duty of that kind, and occasionally when additional medical services are needed and eligible candidates are not available for appointment as assistant surgeons, acting assistants are appointed temporarily to assist the medical officer at a station. Internes are appointed by the medical officer subject to approval of Department. The latest regulations governing the Marine-Hospital Service proper were issued in 1889. New regulations for the government of national quarantine stations have been issued since the passage of the law and are now in active operation.

The Supervising Surgeon-General's Office is a bureau of the Treasury Department. It is located in Washington, D. C., at present in the Butler Building on Capitol Hill.

The officers and employés now on duty in the Bureau are the Supervising Surgeon-General, two surgeons (one detailed as chief of the purveying division, and one chief of the quarantine division); two passed assistant surgeons (one in charge of the bacteriological laboratory, and one as executive officer and attending surgeon); one assistant surgeon, assigned to duty on the Weekly Abstract of Sanitary Reports; one chemist, and the necessary clerks, messengers, and laborers. The medical officers in the Bureau are detailed from the corps by the Supervising Surgeon-General and are subject to orders the same as if on duty at any other station.

The writer served as chief of the purveying and quarantine division from January, 1885, to November 26, 1888.

EPILEPSY—TREPHINING.

By Passed Assistant Surg. W. P. McIntosh.

J. F.; age, 33; nativity, Austria; was admitted to the U. S. Marine Hospital, port of Boston, Mass., with following history:

About two years ago he began to have "spells," in which he would faint away for periods of from two to four minutes. Says he had no muscular twitchings and was able to resume work immediately after one of these attacks. The right arm and right side of chest had a feeling of slight numbness. These "spells" came only about once or twice in two or three months and became progressively worse until he had them as often as twice in one day. Then he would improve and go four or five weeks without an attack. They now begin with twitching of right side of the face and right hand. During period of unconsciousness he will sometimes bite his tongue. Says the sight of right eye is impaired and is becoming progressively worse. His memory is also failing. Right side of face and right side of body growing weaker. Muscles are less under control of will. Sense of touch and thermal sense are obtunded on right side. There is no history of any specific cause and no history of blow on head. Neither scalp nor skull show any sign of injury. Patient is getting progressively worse. Right side of face and right arm and hand are most affected. The attacks, as far as he can say, begin by twitching of muscles at these points. Patient says he generally has a premonition of an impending attack—a feeling of lassitude, heaviness, nervousness, etc., for a day or two beforehand.

Having given the bromides variously, singly and combined, large and small doses, and antispecific treatment having been resorted to, as well as some of the remedies for which favorable results have been more recently claimed, including hydrastine, the conclusion was reached that, although no traumatic cause could be traced, operative procedure held out the only prospect of relief.

February 3.—Having had his bowels cleaned out the night before, his head shaven, and measurements made so as to indicate, according to Broca, Horsley, and Schäfer, the convolutions in front of and behind the fissure of Rolando, these being the motor areas—patient was etherized. A horseshoe-shaped flap was raised, the periosteum pushed aside, and the skull opened with an inch trephine at a point corresponding to centers for face and arm. Immediately upon removing the button, the brain bulged into the opening, indicating increased intra-cranial pressure. The brain was yellowish in color, and what seemed to be the remains of a small infarct were apparent under the dura mater. As but slight additional danger is incurred by opening the dura, this membrane was carefully incised, but owing to injury of an artery (branch of middle meningeal) in dura, and hemorrhage from a large vein on the brain surface in the effort to detach the infarct, it was not deemed best to enlarge the opening in the skull. Vessel in dura was ligated and hemorrhage from brain controlled by hot water and packing with iodoform gauze. Packing left in for seventy-two hours and then removed. No rise of temperature and no pus in or about wound. The only apparent good accomplished was improvement of speech, which lost its hesitating, stuttering way, and was more distinct. The shaking and trembling of muscles of arm and hand much improved. During first two or three days, while the dressings were pressing on the brain, the aura epileptica seemed to have increased in frequency, though modified in force and duration. After removal of dressings no distinct aura occurred.

On February 23, twenty days after the operation, patient had slight aura in evening, but only lasted a few seconds, and he did not lose consciousness.

On February 25 there was a slight rise of temperature (37.4 C.). With this exception here was no untoward symptom after operation. Discharged improved May 8, 1893.

EMPYEMA OF THE LEFT PLEURA—EXSECTION RIB—RECOVERY.

By Passed Assistant Surg. W. P. McIntosh.

A. W.; male; age, 20 years; native of England. Admitted to Marine Hospital, Boston, Mass., February 8, 1893. Patient stated that he had suffered with severe cough with copious expectorations of frothy mucus for past month; cough so severe at times as to cause vomiting. Complains of pains in lower part of chest. For past two weeks has suffered from cold night sweats. Does not complain of rigors or chills, a fact somewhat surprising, as I have observed that in all forms of acute pleurisy, whether rheumatic, metapneumonic, tubercular, or malignant in origin, the intermittent form of fever (chill, fever, sweating), with three distinct stages occurring daily, is so frequent as to be almost pathognomic, provided the malarial form of fever, for which it is not infrequently mistaken, can be excluded. The late Prof. Lynch, of Baltimore, first called my attention to this fact. I do not allude to the rigors attending pus formation, and I speak particularly of this symptom as one not pointed out by most text books on practice. The body temperature was normal at this time; there was dullness at apices of both lungs, bronchial breathing, and a few mucus rales in left axillary region. In a few days, dullness gave way to flatness over left side, inferior portion; no friction sound, as exudation stage had begun. Axillary temperature, 39.4°. Hot applications made to chest.

February 20.—Aspirated left side, withdrawing about 750 cubic centimeters serous fluid. This gave relief; temperature fell, but rose again on 21st; for a week there was no change, temperature rising in evening, falling in morning.

March 2.—Temperature again 39.4°; repeated aspiration, but very little fluid removed; still temperature dropped to normal and continued so to 9th, when it again rose, fluctuating as before for another week, when it again reached 39.4°. At this time dullness, verging into flatness, existed on left side from third to seventh ribs. Having aspirated twice, it was deemed best to make an opening for drainage and irrigation.

March 18.—Patient was etherized and an inch of sixth rib was excised in axillary region. Surg. Sawtelle suggested cutting rib with bone forceps, which was done. thus avoiding artery and nerve, which were left uninjured. The advantage noted of sparing artery and nerve and avoiding hemorrhage is decidedly in favor of use of forceps to cut rib, a proceeding advisable in young persons, but in the aged the chain saw would probably be best, owing to brittleness of bones. One thousand five hundred cubic centimeters of fibro-purulent exudation removed. The exudate contained large quantities of flocculi and pseudomembrane, stringy pieces of membrane so large as to utterly preclude the idea of obtaining relief through aspiration needle or canula. Before allowing the cavity to empty itself it was deemed advisable to pump in a quantity of fluid to prevent syncope, allowing this to mix with and flow out gradually with the purulent exudate, after which the cavity was thoroughly irrigated and a drainage tube inserted. The cavity was irrigated daily with boracic-acid solution, alternated every four or five days with douches of hydrogen-peroxide. The temperature fell to normal the same day that the purulent exudate was evacuated. Although this exudate seemed to be the characteristic effusion of true metapneumonic pleurisy, the thicker and more purulent appearance of the pus, as well as the failure of aspiration to effect any permanent good, would indicate the later development of either staphylococci or streptococci.

Patient made an uninterrupted recovery and was discharged April 23, 1893. The chest wall had slightly collapsed, but there was no sinking of shoulder.

INCURABLE AND TUBERCULOUS CASES.

By Passed Assistant Surg. J. O. COBB.

The great and increasing number of incurable and tuberculous patients on hand in the hospitals of the Service calls for some action by the Government by which these cases can be removed from the various hospitals and placed under one command and under favorable climatic conditions.

The hospital chronic is the bane of every officer's existence, not so much because he is incurable, as the many difficulties encountered in properly administering to a ward where these patients are treated with other cases. All of us know how hard it is to maintain discipline with these seamen, for say all the good of Jack Tar that we may, he is nevertheless a "lawyer," and if his tongue is not paralyzed he will be sure to use his influence in raising disturbances among the recent patients, and being an old timer he is looked up to by the others as a leader.

The chronic knows that he is incurable and that the officer can not or will not discharge him, because he is helpless, and this increases his natural propensity to talk. Another thing; the sailor believes that he has a property interest in the Service because he once paid hospital dues, believing that the Service is now conducted on the accrued funds of those dues, for it is a popular belief that $20,000,000 have accrued in the Treasury. With these ideas in his head it is easy to understand why it is so hard to deal with the chronic case.

It was not intended originally to care for seamen that were hopelessly incurable. It was intended to care only for those immediately sick or injured in the line of duty, and if such injury or sickness were not relieved in ninety days, the authorized period of treatment, then the officer in command could recommend a further extension, such recommendations being tacitly understood by the Department to mean that a further treatment might benefit the patient enough to cure him and allow him to return to his vocation; but if the seaman was known to be hopelessly incurable then he was to be discharged. The Government never contemplated caring for seamen that had become chronics or cripples, and the Service was to be one of expediency for those taken sick or injured in the "immediate" line of duty, and was not for the purpose of furnishing a home for seamen, however needy they might become.

That was the original intention, but such, however, is not the actual condition. Go into any hospital in the Service and we are confronted by chronic patients who can not be cured and whom we can not discharge. We can not discharge chronic patients for many reasons, principally because there is no place provided for them, and the local authorities will not receive these incurables and allow them to become charges of the city, county, or State, nor can we blame them. We can not make local authorities understand that the marine hospital is not a home and never was intended as such. Knowing that the man will not be received at any other institution, we can not be inhuman enough to send him out when he has no possible means of support.

The question naturally arises, what is to be done? These incurables are now Government charges, and increasing so rapidly that some place should be selected as a home for them. It must be done sooner or later, and the economy can not be questioned. It would be beneficial in all respects, to the patient and to the hospitals, to have these cases removed and placed under one command and under favorable climatic conditions.

The Service is confronted with the question of properly dealing with incurables and cripples, for they are on hand and must be attended to now as well as in the future. I do not mean to infer that these cases are in the hospital by choice, but on the contrary they are Government charges because of the hardships induced by their calling. Long voyages kill many sailors and make many hopelessly incurable cases. The Bering Sea fleet each year adds a great many incurables to the already large number in the hospitals on the Pacific coast, and there are several of these in this hospital (Port Townsend) at the present time, with no possibility of ever getting well.

TUBERCULOUS CASES.

Tuberculosis is a disease that must be specially dealt with under the most favorable conditions, and certainly such conditions can not be found in the general hospital.

The great number of tuberculous cases demands some prompt action by the Government to relieve the hospitals as well as to move the patient to a locality favorable for his recovery. The general hospital is not the proper place to treat these patients even though there were room enough to isolate them. For climatic conditions, also, the various hospitals situated in different parts of the country are not conducive to the comfort or the eventual recovery of these cases. As an actual fact nearly all seamen with tubercle of the lungs die. These cases are discouraging to treat even in an equable climate, but far more so when the climatic conditions are unfavorable, and nearly every station in the Service is unfavorably situated in this respect. To emphasize the fact of the great fatality of the disease more strongly, take the Service statistics for an average year, say 1890, and we find that 756 cases of tubercle were treated, 2 recovered (the 2 recovered were local tuberculosis), 327 improved, and 113 died (20 per cent), 86 being on hand at the end of the fiscal year. That is a large percentage of deaths, too large, and these statistics are even then unreliable to this extent—many of the cases reported as "improved" finally return or go elsewhere and are recorded as new patients, while, in fact, they are old ones. The same case goes out "improved," tries to work, gets worse, goes into another hospital, is reported as a new case, possibly goes out again "improved," and so on until he finally dies. This is the average history of the consumptive patient. I should say, that taking into consideration this fact, the percentage of deaths yearly is nearer 35 than 20 per cent. My experience has been that nearly all of these cases die in the hospital, finally. They may get better and return to their vocation temporarily, but sooner or later they return or go to some other hospital.

Now aside from the question as to whether tuberculosis can or can not be cured even though it were treated in hospitals in a mild climate, and aside from the known danger of infection, the general moral effect of removing infected cases can hardly be questioned.

It would be well to have two hospitals in the Service for the care of incurable and tuberculous cases. One of these institutions should be in the East, either in southern Georgia or Florida, and the other in the West and in southern California. The situation should be in some quiet locality, and the buildings for the chronic cases constructed on the pavilion plan, while those for consumptives built on the cottage plan to allow of classification and segregation of cases.

This leads up to another vital point with the Service. The Service is and must continue to be actively progressive. We have the control of quarantine matters and we must take the initiative in the study of preventive medicine in this country. Tuberculosis being the most fatal of all the infectious diseases should be specially studied and treated. A competent pathologist and bacteriologist should be in command of these stations and an untiring and unremitting investigation carried on to find a cure, and if not a cure, the most reliable method of treatment.

The Army and Navy have a hospital at Hot Springs, for the specified purpose of treating certain chronic diseases occurring among the personnel of the two services, and it has been demonstrated that the plan was good in every way, especially in an economical sense. Many of their cases are cured and return to duty in their respective departments. If the Army and Navy Hospital at Hot Springs is a success in every respect then such a hospital or hospitals in this Service would be far more successful, for where the other services treat one case we treat four. The other services have two objects in view in the use of the hospital at Hot Springs—economy and the return of enlisted men to duty, thus keeping up the efficiency of the two services—while the prime object with us is economy and the comfort of the patient, for the question of cure of tuberculosis is still in an unsettled condition.

ACCIDENTAL WOUND OF INTERNAL JUGULAR VEIN—RECOVERY.

By Passed Assistant Surg. JAMES B. STONER.

Surgical operations upon the neck, because of the many great nerves and vessels contained in this region, are always approached with the greatest caution, if not trepidation. Especially is this true when operations involve deep-seated neoplasms, where incisions can not be made large enough to fully expose the parts, and where the sense of touch must alone be depended upon.

The fact that the carotid artery and internal jugular vein have been injured in so many cases is sufficient to cause the surgeon to exercise the greatest care in these operations.

The following described case will illustrate some of the difficulties which may occur in these operations:

February 4, 1893.—Seaman G. K., aged 28 years, was admitted to the marine ward of St. Vincent's Hospital, Portland, Oreg., for the extirpation of a lymphoma of the neck. Its development began about six months previously and at the time of operation had attained the size of a large walnut. The tumor was situate in the left superior carotid triangle, was held down by the deep fascia and scar tissue, the latter resulting from a previous unsuccessful effort, by a practitioner, for the removal of the gland. The patient anæsthetized and the seat of operation rendered aseptic, an incision was made extending well over the summit of the tumor, when it was found that there were firm attachments to surrounding tissues, nerves, and vessels, making its removal very difficult. I accordingly exercised much care in the work of extirpation, but, notwithstanding my tedious efforts, finally wounded the internal jugular vein (in its deep and abnormal position), to the sheath of which the tumor was connected, and which prevented collapse of its walls.

There was at once a full and rapid flow of dark blood, nonpulsatile in character. Indeed, the stream was so rapid that it was impossible to sponge the wound sufficiently clean to locate and grasp the bleeding vessel for the purpose of ligation. I therefore carried hæmostatic forceps to the extreme depth of the wound in the tissues and finally succeeded in seizing the divided ends of the vessel and satisfactorily controlling the hemorrhage. The tumor was then removed by careful dissection and tearing with the fingers and handle of scalpel. Owing to free hemorrhage and difficulty of access to the injured vessel, the forceps were left hanging in the wound, this being preferred to further attempts at ligation. I then carefully packed with iodoform gauze, using the usual antiseptic dressing. At the expiration of seventy-two hours the forceps were removed and the wound repacked with gauze and dressed from time to time until granulation was complete and the wound closed. Immediately following division of the vessel there were symptoms of the entrance of air into the vein, indicated by weak pulse, feeble and irregular heart action, and oppressed respiration. Pressure was at once made upon the vessel at the cardiac side, the head lowered, and hypodermic injections of whisky administered. Reaction was established in the course of a few minutes.

TEMPORARY LOSS OF COLOR SENSE FOLLOWING AN INJURY OF THE EYES.

By Passed Assistant Surg. A. C. SMITH.

The instance of temporary loss of color sense here noted came to my attention some considerable time after Bureau circular of September 5, 1892, requesting reports of such cases, was received and answered, but it has occurred to me that the case might be sufficiently interesting to report specially. I regret that I have only the man's own statements as evidence of his loss of color sense, but these statements were made in an intelligent and straightforward manner, and I regarded them as trustworthy. I determined for myself that his color sense was good at the time I knew him. His account was as follows: In the year 1858 he passed an examination in color sense at Norfolk, Va. In the year 1867 he was examined a second time at Norfolk and passed. In July, 1881, his eyes were injured by a scald and he was blind for four months. In December of the same year he was examined at Norfolk again. His sight was then very poor, and he could not distinguish colors at all; they were "all mixed" to him. In the spring of 1882 he was suffering from the excessive use of tobacco, and quit smoking by the advice of a physican, but continued to chew tobacco. He drank liquor to excess also at this time. In the summer of 1883 he was examined at Baltimore, Md. His sight had improved greatly, and he could read the test type fairly well, but he could not distinguish colors. In the spring of 1888 he was examined at Baltimore again. He could distinguish colors a little, but he did not succeed in getting a license. He still had the habits of excessive use of liquor and tobacco.

I examined his sight December 29, 1892. He did not come as an applicant for a pilot's license, but was curious to know what his visual ability and color sense were. I found his color sense perfectly correct and his visual ability as follows: Right, $\frac{20}{30}$; left, $\frac{20}{50}$. He was still using tobacco, and a month before I had had him under treatment in hospital for alcoholism. He was then about 60 years of age, and had followed through his life the occupations of seaman and submarine diver. From the history of the case it is evident that the excessive use of tobacco or of alcohol had little or nothing to do with the failure of color sense, and did not prevent its being regained. It would be interesting to know what the condition of the eyes was when ordinary vision was regained after the injury, but color sense was still lacking. I had no means of discovering this.

COMPOUND LINEAR FRACTURE OF THE FRONTAL BONE—ACUTE MENINGITIS—TREPHINING—DEATH.

By Assistant Surg. SEATON NORMAN.

J. T.; a negro roustabout; aged 24 years; a native of Kentucky; was admitted to the U. S. Marine Hospital at Evansville, Ind., April 14, 1893. The patient, while transferring lumber from the wharf to the steamer *Ragon*, became involved in an altercation and received a severe blow upon the head. The assault was committed by a negro and the weapon used was a thick piece of lumber, the dimensions of which could not be ascertained. The blow was sufficient to cause only transient loss of consciousness and the victim was conveyed to the police station where a local surgeon sutured and dressed the scalp wound. The patient was then passed from one officer to another, walking a distance of about 2 miles to the Marine Hospital. When admitted on April 14, at 11 o'clock p. m., his general condition was good. On account of the long walk he was somewhat exhausted and 15 centimeters of whisky were ordered. His temperature was 38° C., pulse full and regular, and respiration normal. The dressing was not disturbed.

April 15.—Morning temperature normal. Stated that he felt well. Wound was inspected and was found to extend 2.5 centimeters obliquely upward and outward from the left frontal eminence near the middle line. Dressed with iodoform gauze.

April 16.—Temperature, 37° C. a. m.; 37⅗° C. p. m. Wound dressed. Quin. sulph., 0.6 gm. ordered in evening.

April 17.—Temperature, 37° C. a. m.; Pill. C. C. (U. S. P.) III, and enema ordered. The patient requested permission to leave the hospital; was advised to remain. On same evening became delirious and temperature rose to 40° C. Quin. sulph., 0.6 gm. ordered. Wound almost healed.

April 18.—Muttering delirium. Temperature, 39⅘° C. a. m.; 40⅘° C. p. m. Patient very restless and "humane restraint" was applied during the day. Also, morphine sulph. administered hypodermatically. Quin. suph., 0.3 gm. t. i. d. It was decided to operate the same evening. The scalp was shaved and washed thoroughly with soap and water and a solution of bichloride of mercury (1 to 1000). The patient was anaesthetized (chloroform) by Dr. J. C. Le Hardy, interne, and a V-shaped incision was made on the forehead a little to the left of middle line, the course of the wound forming one of the lines of incision. The flap being reflected, a slight fissure was detected and the trephine was applied over the middle of its upper extremity. A large button of bone was removed and beyond a tense and engorged condition of the dura mater nothing of importance was detected. It was considered unadvisable to incise or puncture the dura. The piece of bone was replaced and the wound sutured with catgut, a small strip of iodoformized gauze being placed at the lower angle of incision. A hypodermatic injection of morphine and atropine was administered and the patient returned to bed. Slept well during night.

April 19.—Patient quiet and rational. Temperature, 39° C. a. m.; 41° C. p. m. Wounds dressed in evening. Restless, delirious, and restraints applied. Hyperdematic injection of morphine and atropine given when necessary.

April 20.—Temperature, 38⅗° C. a. m.; 40⅘° C. p. m. Complains of pain in occipital region. Ice bag applied at intervals to back of head.

April 21.—Temperature, 39⅖° C. a. m.; 39⅘° C. p. m. Pulse and respiration good. Complains of pain in abdomen, and enema was given. Muttering delirium returns during evening, and marked deafness supervenes.

April 22.—Temperature, $39\frac{1}{5}^{\circ}$ C. a. m.; $40\frac{4}{5}^{\circ}$ C. p. m. Pulse full, but irregular. Fifteen centimeters of whisky ordered every three hours. Does not understand anything, and talks continuously.

April 23.—Temperature, $39\frac{2}{5}^{\circ}$ C. a. m.; 40° C. p. m. Pulse very irregular, and whisky continued.

April 24.—Pulse at 9 a. m. was hardly perceptible, and respiration labored. Temperature not taken. Died at 11 o'clock a. m.

Necroscopy (six hours after death).—Body well nourished. *Rigor mortis* marked. Wound examined and no pus detected. Edges of wound partially united. Button of bone removed and dura mater incised, but no fluid escaped. On removing scalp, fissure was observed 5.1 centimeters in length, commencing at left of nasal spine and extending obliquely upward and outward. Small clot found at lower termination of fissure. The dura mater showed general congestion and inflammation. On removing dura a small clot was detected resting on cortex near the fissure of Sylvius, and above the upper limit of the fracture. A third clot of smaller size appeared just to the right of the longitudinal fissure and posterior to the parieto-occipital lobe. Other organs not examined.

A SIMPLE AND USEFUL STRETCHER FOR USE IN OPERATING ROOM, WARD, AND AMBULANCE.

By Assistant Surg. L. E. Cofer.

The difficulty usually experienced in moving a patient from the operating table to a stretcher, and the danger from disturbing the dressings where he is taken up by several men who may not lift together, has suggested this style of stretcher. Its usefulness will be readily seen after the description below is read.

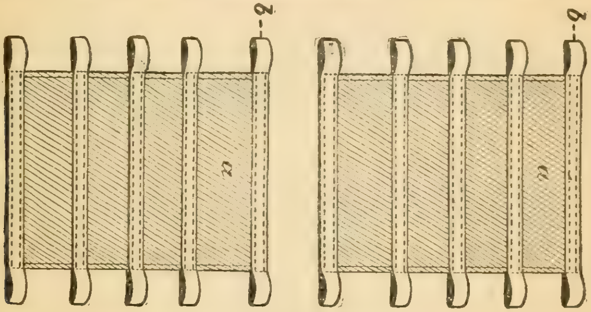


Fig. 1.

Fig. 1 represents the two halves of the floor of the stretcher. These are 3 feet long each and 27 inches wide. The material must be white canvas. The squares *a* are strengthened by the side loops *b*, which are made of the same material and are stitched to both sides of squares. The diameter of the loops must be 2¼ inches. There must be five loop straps to each square. Just here I will say that these squares are intended to be made aseptic and placed upon the operating table before the patient is put upon it; after the operation the poles are slipped through the loops and the stretcher managed by two men.

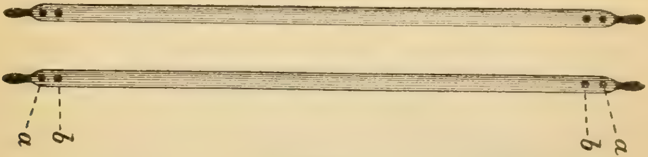


Fig. 2.

Fig. 2 represents two poles, made of hard wood, rounded, diameter 2¼ inches. Length of poles 7 feet, 4 inches on each end cut down for handles, and 2 inches left for holes *a* and *b* on each end. The holes marked *a* are for the cross wire (see fig. 3).

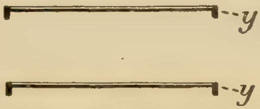


Fig 3.

The holes marked *b* are for the reception of the pins *x* (see figs. 7 and 8), which serve to hold the stretcher in position should it be used in an ambulance.

Fig. 3 represents the cross wires, which consist of two pieces of steel wire three-eighths of an inch in diameter, and 29¼ inches in length, not including the bent part *y*, which should be 2¼ inches in length. The use of the cross wires will be shown in fig. 4, which represents the stretcher ready for use. The cost of this stretcher complete will be $10; much less, where sailors can be found who know how to work in canvas.

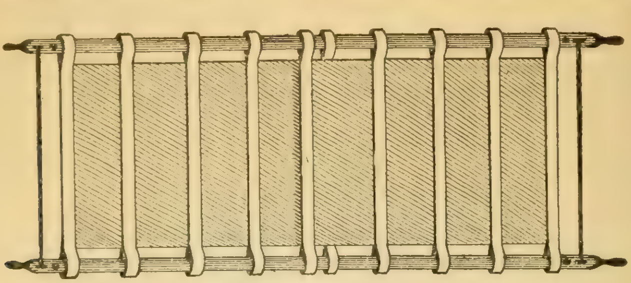


FIG. 4.

For the use of this stretcher in ambulances, several things must be done, as follows:

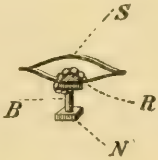


FIG. 5.

Fig. 5 represents a steel spring 12 inches long and 5 inches high, provided with a slot *S* on top for the reception of cross bar (see figs. 6 and 7), and a rubber *R*, to help sustain all weights over 175 pounds. This will be fastened to the bottom of the ambulance by means of the bolt *B* and the nut *N*.

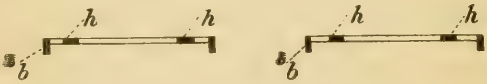


FIG. 6.

Fig. 6 represents the cross bars to be used in connection with the springs as a bed for the stretcher. They must be made of steel, 1 inch wide and one-fourth inch thick. Their length may vary, as may the distance between the springs from side to side, but the holes *h*, for the reception of the pins *x* (see fig. 7), shall always be 29¼

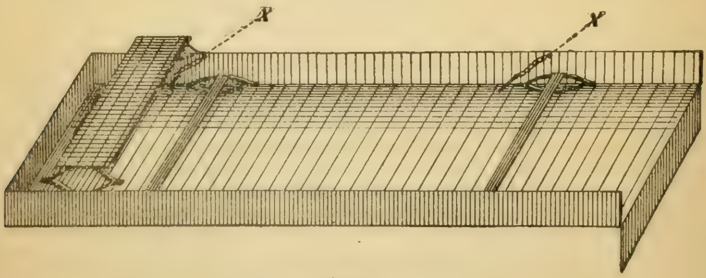


FIG. 7.

inches apart. At each end they must be bent (*b*) fig. 6, to fit into slot *s*, of spring (see fig. 7).

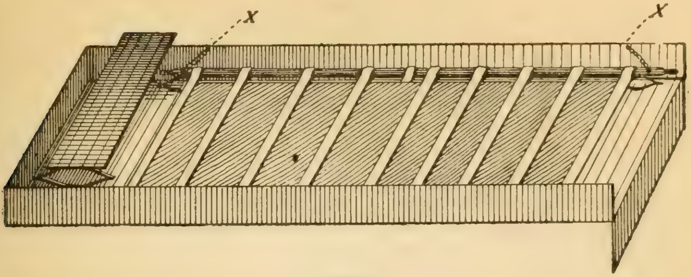


Fig. 8.

Fig. 8 shows stretcher in position.

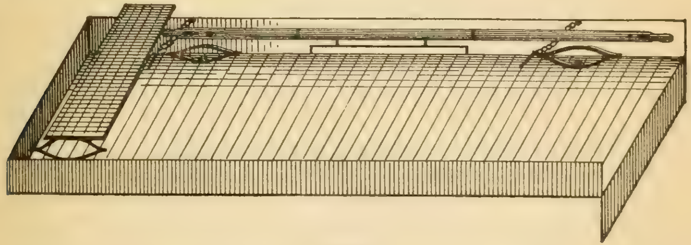


Fig. 9.

Fig. 9 shows stretcher packed away in ambulance when not in use.

REPORT OF HOSPITAL CASES.

By Assistant Surg. C. E. DECKER.

The following cases, which have been under my immediate charge at the hospital at San Francisco, while not remarkable, still seem to me to present some specially interesting features.

Case 1, Abscess of buttock.—Interesting, because of mode of infection; a peculiar venous reflex; and as illustrating the value of treating large abscesses by packing instead of by small incision and drainage tube.

H. P.; aged 29 years; good personal history; large and strong; no organic disease; complains of pain in left buttock and inability to walk. Admitted April 19, 1893.

History.—Several months ago had over coccyx a small abscess, cause unknown; abscess incised by ship's surgeon, who packed cavity with oakum. A sinus resulted, which would not heal. A few weeks ago patient applied at Marine Hospital dispensary; officer in charge explored sinus and removed from it considerable oakum. Patient soon apparently well. Fourteen days ago pain began in left buttock. Patient now has fever (38, 39 C.), can't lie on back; breaths 35 to 50 times a minute; countenance anxious. Large tense swelling on the upper and inner aspect left buttock, throbbing and painful, skin not red. No spinal tenderness, rectal examination negative. Exploring needle found thick yellow pus at depth of 8 cm.; 100 c. c.; withdrawn; partial relief of symptons; breathing less rapid and pain less; fever same. Two days later all symptoms returned; aspiration, 250 c. c.; thick pus removed; relief immediate. Next day skin reddened over coccyx; fluctuation; incision, oakum and pus escaped. Three days later exploration under chloroform; incision over coccyx; small circumscribed abscess found containing a large lock of oakum; large abscess in substance of glutæus maximus incised and drained. Two days later evident that whole of trouble not reached; further exploration under chloroform; immense abscess found below gluteal muscles, occupying whole of external iliac fossa, and burrowing almost into pelvis; large amount of pus evacuated; no bare bone found; cavity cleaned out and drained with large rubber tube. In a few days, the tube having failed to drain whole of cavity and fever resulting from pus accumulating in pockets, incision enlarged to about 7 inches long, and cavity of abscess packed with iodoform gauze to secure healing from bottom. Some idea of the size of the cavity may be judged from the fact that it took 10 to 12 yards of 4-inch gauze, not very tightly packed in, to fill cavity. With the evacuation of the main abscess all the symptoms abated, including the rapid breathing. The cavity was repacked and dressed every three to five to seven days. Improvement was steady. Patient discharged Augu st 16, recovered.

I think it plain that the abscess was caused by infection of the deep gluteal and sciatic lymph glands from the small abscess over coccyx, this abscess being caused by the retained oakum. The cause of the original coccygeal trouble I was unable to discover. There was no bone disease while patient was under my care.

The rapid breathing I think was due to the reflex disturbance from pressure on the nerves of the region.

Case 2, Empyema.—Interesting because of the unusual burrowing of the pus.

J. H.; aged 29 years; coal passer on transpacific steamer, admitted December 23, 1892. Thirty-five days before admission, at sea, noticed temporary tenderness in right side of chest; had malaise, but kept at work. Ten days before admission had a chill; two days later a swelling appeared in right lumbar region. Had no cough.

Examination.—Very weak; weight, 130 pounds (normally 150); skin dry; temperature (a. m. 38C., p. m. 39C.). Lungs: slight dullness right apex; harsh breathing at both apices. Heart normal, abdomen tympanitic, urine normal. In right lumbar region there was a large, smooth, globular tender swelling. Exploring needle finds pus. Probable diagnosis, perinephritic abscess.

December 29.—Ether; diagonal incision as for lumbar nephrotomy. Pus found beneath fascia, 500 c. c. evacuated; source, pleural cavity; kidney not exposed. Large drainage tube introduced. Temperature immediately became normal and recovery was rapid, patient being discharged February 6, well.

I saw him on the street several weeks after, and he said he was in perfect health, and weighed between 150 and 160 pounds. He looked extremely well.

Empyema, though considered, was excluded, as there was no dyspnœa, no abnormal area of dullness in right side, and vesicular murmur was present as low as normal. I ascribe the absence of pleural signs on admission as due to the pus having mostly escaped from the pleural cavity.

The course the pus took I was unable satisfactorily to determine, but think it escaped from the pleural cavity between the diaphragm and the outer border of the quadratus lumborum, following the latter muscle downward.

Cases 3 and 4, Fistula in ano.—The first case interesting on account of the relapses, the second on account of the long duration of the disease, and both because of absence of tubercle of lung.

J. C.; aged 33 years; admitted March 20, 1893. General health good. Family and personal histories good. No lung disease. Fistula first appeared sixteen years ago. Cutting operation two years later; recovery. Recurrence four years later; abscess lanced; recovery in three days. Was well until last August, when there was recurrence again; same location of disease in all instances. Fistula on left side of anus; two external openings near together 1⅞ cm. from margin of anus; one internal opening 2½ cm. from anus.

April 1.—Ether; sphincter thoroughly stretched; fistulous tracts laid open freely and thoroughly curetted. Plug introduced composed of iodoform gauze wound about a piece of large rubber drainage tubing. Bowels confined three days, when plug and feces brought away by enema given through tube. Wounds packed with strip of gauze every second day. Reflex disturbances of bladder, lasting for three weeks; at first retention, later tenesmus and ardor urinæ and frequent urination. Discharged, recovered, June 7.

A. R.; aged 43 years; anemic, but has no discoverable organic disease. Fistula in ano for seven years, following "Panama fever." During treatment of fever he was given quinine in solution per rectum. Several fistulous openings on left of anus near margin; one internal opening 3¾ cm. from anus; pus in considerable amount.

Operation May 5.—Ether; same proceedings as in other case. Similar symptoms on part of bladder, but less severe, lasting only a few days. Same after treatment as in other case. Discharged, recovered, June 19.

Case 5, Glucosuria.—Interesting because of the tracing of a possible cause, and because of the disappearance of the sugar under treatment.

T. I.; aged 30 years; admitted February 9, 1893, for ulcer of leg. Sent to surgical ward, where Assistant Surg. Brown elicted the following history and diagnosed the glucosuria. Has always had good health. Drinks to excess on shore. Ulcer of penis thirteen years ago, but had no symptoms of syphilis. On a big spree two or three weeks ago. Ulcer of leg two weeks. Has not been feeling well for two weeks.

On admission all symptoms of diabetes mellitus marked—2,500 c. c. urine in eight hours, sugar-laden. Heart and lungs normal; no nervous disease.

On February 16, ulcer being nearly well, patient transferred to my care in medical ward. On further questioning him, learned he seldom ate sweets; but that one day during the last holidays he had eaten excessively of cheap candy from a large box broken open in the freight on board his boat.

Had had diabetic diet in surgical ward, but improvement had been slight. I continued the diet, and prescribed morphine sulphate, 0.015 gm. t.i.d. (Osler, Practice of Medicine, p. 304). Immediate improvement occurred during next few days; urine less in quantity, specific gravity steadily lowering, less sugar. On February 21 I doubled the dose of morphine. On February 22, six days after beginning the treatment, examination of urine showed: twenty-four hours, quantity, 1,950 centimeters; specific gravity, 1,022; reaction, acid; no sugar. Two days later I withdrew the morphine to see if sugar would return. February 28, specific gravity, 1,020; no sugar. Next day sugar was in large amount and other symptoms proportionately severe. I immediately ordered 0.03 gram morphine t.i.d. March 3, sugar less; quantity urine in twenty-four hours, 2,625 centimeters; specific gravity, 1,020. March 5, sugar absent, specific gravity, 1,010; urination much less frequent during night. On March 4 I discovered that by error of nurse, patient had been getting a few string beans or green pease once daily for three or four days; but since, while getting these, the sugar decreased under the morphine. I do not consider the error had an important effect in the case. From this time improvement was continuous, except that on March 9 sugar reappeared for that day only. On March 12 the dose of morphine was increased to 0.12 grams in the twenty-four hours. On March 22 the dose was reduced to 0.09 grams in twenty-four hours, and next day stopped entirely. Patient discharged March 28, at own request, in good health.

Of course I do not regard the outcome as a positive cure, but only as indicating the value of morphine in the disease. At no time were the ordinary effects of morphine seen, and its withdrawal was no hardship to the patient.

To guard against possible error, the samples of urine were examined while fresh and the Fehling solution was frequently renewed.

OBLIQUE INGUINAL HERNIA (INCARCERATED)—OPERATION FOR RADICAL CURE.

By Assistant Surg. JAS. A. NYDEGGER.

T. O. S.; aged 43 years; nativity, Pennsylvania; admitted to the marine ward of the Mercy Hospital, Pittsburg, Pa., August 10, 1893, with a small irreducible oblique inguinal hernia of the right side. The hernia had existed for eight years. At no time had it caused much inconvenience. The patient had not worn a truss. Occasionally when lifting in a stooping position the hernia would come down, but was always easily returned by manipulation. Seven days previous to August 10 the patient jumped from the deck of a boat down on a wharf, a distance of 6 or 7 feet. The hernia came down, and neither he nor his captain (during numerous attempts at different intervals) were able to return it. The patient continued to perform his duties as usual on board the boat, and on arriving in the city applied at the office for relief. He had experienced no difficulty or pain, beyond a slight soreness in the right inguinal region, from the time of the accident. The bowels had moved freely every day. Taxis without an anæsthetic failed to reduce the hernia. An operation was advised, not so much to remove the present danger as to prevent complications from occurring at any time in the future, which might lead to a case of strangulated hernia.

The operation was performed under anæsthesia by ether and with antiseptic precautions. An incision from 4 to 5 inches in length, with the center of the incision corresponding to the middle of the swelling, was made, running from the upper border of the external ring down toward the apex of the right scrotum. The peritoneal sac containing intestine was reached, opened, and a finger introduced for the purpose of returning the intestine to the abdominal cavity. This, it was found, could not be executed without subjecting the intestine to much pressure in manipulation, for a portion of gut, apparently not to the exclusion of its lumen projected beyond the external ring of the canal, and distended to a considerable extent with gas and solid matter, was thus held by a band of constricted tissues at the internal ring. Accordingly a hernia knife was passed in with considerable difficulty, and the tissue, forming the constriction divided in the direction of the umbillicus, and the incarcerated gut returned to the abdominal cavity. Its color was perfectly normal, showing that its circulation had not been obstructed. The sac was dissected out from the surrounding tissues to within the abdominal cavity and tied off as far up as possible after traction had been exerted on it.

The sac, or that portion of the peritoneum external to the ligature was formed into a pad and placed in the external opening of the canal behind the pillars, and in this position stitched to the pillars on either side and above. The incision was closed with interrupted sutures. Silk-worm gut was used for the ligature and silk for the sutures and stitches. Dry bichloride gauze, absorbent cotton, and a bandage applied completed the dressings. No arrangement was made for drainage.

The progress of the case from the date of the operation up to the tenth day was uneventful. A slight rise of temperature, 37.8 C., took place on the day following the operation, but by the succeeding day it had sunk to normal.

On the ninth day after the operation the original dressings were removed. They were unsoiled. No discharge had taken place. The wound had entirely healed over. The sutures were removed. The morning following the patient complained of pain in the region of the operation. The temperature was slightly above normal. By 4 o'clock p. m. of the same day the temperature had reached 39.60 C., accompanied by a rapid pulse, headache, and general discomfort. The patient was anæsthetized and the wound reopened. In the site of the obliterated external ring of the canal a pus pocket was found containing, probably, 30 centimeters of foul-smelling pus. The wound was irrigated with hot bichloride solution, dusted over with iodoform and packed with iodoform gauze. The patient was put on a supporting treatment. Thirty hours afterwards his temperature had dropped to 37.2° C. The wound at once took on a healthy appearance, and at present is almost closed by the granulation process. There are no appearances of a returning hernia. The patient will soon be discharged, it is presumed, completely recovered.

There is nothing of particular interest in connection with the above case why it should be reported, except the fact of a suppurative process occurring in the wound the tenth day after the operation.

I am of the opinion that the wound was inoculated by the silk used to stitch the peritoneal pad to the pillars of the ring. Previous to the operation the silk was boiled in water for twenty-five to thirty minutes, and remained in hot water until removed for use. Perhaps the disinfecting process was not continued a sufficient length of time to destroy all septic material in the central portion of the thread, which afterwards was absorbed by the tissues in close juxtaposition.

The constriction exerted on the sac by the ligature was not of sufficient force to prevent circulation distal to the point of ligation, and thus produce local gangrene.

THE RELIEF STATION AT SOLOMONS, MD.

By Acting Assistant Surg. W. H. MARSH.

This station was established in January, 1890, through the efforts of the present Surgeon-General, who, whilst in charge of the U. S. Marine-Hospital Service at Baltimore, Md., in 1882, was brought in contact with the oyster dredgers of the Chesapeake Bay, a class of seamen of whose hard and toilsome life very few have any conception. Surg. Wyman, during this service, had abundant opportunities of viewing the results of the hardships and sufferings these men were subjected to during the winter months; and very graphically portrayed them in a paper read before the American Public Health Association, which was published in its report for the year 1884.

From a practice among this class of seamen extending through sixteen winters, I can testify to the fact that the life of the oyster-dredger as described by Surg. Wyman was under, rather than over, drawn. I have seen many cases of disease and injuries occurring among them where the patient has been kept aboard ship, in a small forepeak, subject to all the discomforts incident thereto, until he recovered sufficiently to go to work again, or the vessel had caught her cargo of oysters, as it would have been too much time lost to carry the patient to either Baltimore or Norfolk, the two cities bounding the oyster grounds on the north and south, where hospital relief could have been obtained. In some cases sick and wounded seamen have been put ashore, they being too much of an encumbrance aboard ship, where they would seek relief from some farmhouse, if able to crawl, or would be found lying along the highway in an exhausted condition.

Surg. Wyman advocated the establishment of a relief station in close proximity to the oyster grounds, to which the sick and wounded could be carried and cared for. These efforts were finally accomplished, and the condemned U. S. revenue cutter *Stevens* was obtained, fitted out with all necessary stores, and converted into a floating hospital. She was placed in charge of Assistant Surg. J. B. Stoner, towed to the Patuxent River, and anchored on January 28, 1890, where she remained till the close of the dredging season in April.

In October of the same year, the *Stevens* having been sold in the meantime, Surg. Hutton was detailed to obtain a site on shore in the same locality where a relief station could be established, and Solomons was selected. This place was formerly an island, but is now joined to the mainland by means of a causeway, and lies on the Patuxent River about 2 miles above its mouth. It is a village of 450 inhabitants, many of whom are engaged in the oyster industry. A house was rented and fitted with the necessary furniture and stores, a contract made for subsistence and nursing of patients, and placed in charge of an acting assistant surgeon.

A better location could not be found. In the roadstead in front of the village is a harbor that is unexcelled, and here nightly and in stormy weather hundreds of oyster boats and other vessels lie at anchor. This place being nearly centrally located, as regards the oyster grounds, large numbers of vessels come here when provisions or water run short, there being several large stores and two artesian wells from which they can be supplied, besides three shipyards, where any damages to their vessels can be repaired. On Sunday it is no unusual sight to see 300 or 400 vessels lying at anchor in the harbor.

The kinds of injuries received at this station are those mostly caused by the dredge cranks, though of late years, since some improvements have been made in the "patent," they are not as numerous as they formerly were. Poisoned wounds of the hand, sometimes called "oyster-shell hand," are frequent, causing much pain and suffering among them. Gonorrhea, ulcer of the penis, and inflammation of the lymphatic glands of the groin are quite numerous.

It is a very noticeable fact that comparatively few cases of pneumonia and pleurisy are seen among this class of poorly fed, thinly clad, hard worked set of men. Numbers of them come to the office in the coldest weather wearing only a coat, shirt, and trousers, often of the thinnest material, more suitable for summer than winter wear, and often without stockings. Bronchitis heads the list of diseases to which they are subject, while rheumatism is very prevalent, due to their sleeping on the bare floor of the forepeak in their wet clothing, often with no covering to put over them, and only the heat of a diminutive stove and a smoky coal-oil lamp to take the chill off the place, yet the laws of Maryland say every vessel engaged in the oyster industry shall carry a mattress and blanket for each member of the crew. In some cases the food provided has been of the poorest kind, conducive to dyspeptic and diarrheal troubles, but since several masters of dredging boats have been prosecuted by the U. S. commissioner for issuing poor and insufficient food, and for ill treating crews, this has been obviated to a great extent.

As the captains of these vessels are opposed to losing any time during the day the majority of those seeking relief present themselves for treatment at night, after the vessel has come into harbor and anchored, and should she be late in getting in harbor on account of light winds it is no unusual thing to be rung up at midnight.

Sunday is a red-letter day for sick calls, and the doctor is on duty all day. The largest number presenting themselves for treatment on Sunday was in November, 1892, when office relief was furnished to 21 applicants, 2 admitted to hospital, and 3 had prescriptions renewed, besides having to fill out the master's certificate in nearly every case, as the captain will inform you he will sign it but is unable to fill it out. The patient is always accompanied by the captain or mate of the vessel, for fear he will take this opportunity to desert.

In accidents requiring operative interference the operator is often compelled to rely on the members of the crew who have accompanied the injured one to the hospital to assist him, as no other medical men reside in the immediate vicinity.

During an operation for strangulated hernia, performed at night, in December, 1892, after anesthetizing the patient, the cone was given to the mate of the vessel, who kept up the anesthesia throughout the operation, the nurse doing the sponging, while two of the crew were utilized in holding lamps and rendering other assistance. It suffices to say the patient recovered without any serious mishap. This patient was the subject of a double inguinal hernia, brought on by hard work at the dredge cranks, the right hernia becoming strangulated about forty hours before his admission. He was a Russian, unable to speak English, and the captain of the vessel disregarded his complaints of pain at first, thinking his trouble was of no account until the great swelling and tension of the scrotum, to which his attention was drawn by one of the crew, showed some serious condition prevailed.

Through the kindness of the Women's National Relief Association two large boxes of clothing have been received and distributed to the needy ones. The Chesapeake Bay missions, of Baltimore, have also contributed to the same purpose.

Appended hereto is a tabulated statement of the patients treated at the station, from its establishment in November, 1890, to the end of the fiscal year, June 30, 1893.

MEDICAL.

Measles	3	Malarial fever, remittent	1
Influenza	28	Malarial cachexia	6
Mumps	4	Gonorrhea	75
Dysentery	3	Alcoholism	5
Malarial fever, intermittent	43	Debility	11

MEDICAL—Continued.

Rheumatism	40
Rheumatic fever	1
Tubercle lung	1
Apoplexy	1
Paraplegia	1
Neuralgia	7
Vertigo	3
Megrim	10
Epilepsy	1
Nasal catarrh	1
Ozena	1
Valvular disease of heart	1
Bronchitis, acute	191
Hemorrhage of lung	2
Pneumonia	3
Pleurisy, acute	1
Sore throat	23
Quinsy	1
Follicular tonsilitis	12
Follic. inflam. pharynx	1
Dyspepsia	36
Gastrodynia	6
Vomiting	1
Catarrhal inflam. of intestines	14
Obstruction of intestines	1
Diarrhea	40
Constipation	57
Colic	2
Jaundice	1
Ascites	1
Inflam. of bladder	10
Irritability of bladder	4
Spermatorrhea	3
Lightning stroke	1

SURGICAL.

Erysipelas	1
Syphilis, primary	4
Syphilis, secondary	16
Condyloma	3
Papilloma	1
Conjunctivitis	11
Iritis	6
Hematoma eyelid	1
Sty	2
Abscess external auditory meatus	1
Inflam. middle ear	4
Ulceration of nose	1
Fissure of lips	1
Caries dental tissue	51
Abscess dental periosteum	3
Inflam. gums and alveoli	1
Toothache	4
Hernia, umbilical	1
Hernia, inguinal	2
Hernia, inguinal strangulated	1
Piles, internal	1
Piles, external	10
Fistula in ano	1
Inflam. lymphatic vessels	1
Inflam. lymphatic glands	21
Suppuration lymphatic glands	4
Haematuria	1
Retention of urine	4
Stricture of urethra	2
Inflam. prostate gland	1
Ulcer of penis	51
Hydrocele tunica vaginalis	2
Orchitis, acute	5
Epididymitis	1
Synovitis, thumb joint	1
Inflam. muscles	49
Ganglion	1
Œdema connective tissue	1
Abscess	6
Erythema papulata	1
Eczema	19
Impetigo	5
Ulcer	28
Fissures	12
Boil	24
Whitlow	3
Corn	1
Ringworm	1
Phtheiriasis	12
Snake bite	1
Strain of muscles	2
Burns and scalds	7
Frostbite	5
Abrasion	5
Foreign body in hand	1
Scalp wound, bone not exposed	5
Scalp wound, bone exposed	2
Fracture vault of skull, compound, with depression and laceration of brain tissue	1
Wound of face	8
Contusion of eyelid	1
Wound of eyelid	6
Wound of neck	1
Contusion of chest	1
Dislocation costal cartliges	1
Contusion of back	7
Contusion of abdomen	1
Wound of groin	1
Contusion, upper extremity	8

SURGICAL—Continued.

Sprain, upper extremity	2	Fracture, phalanges of thumb, compound comminuted	1
Wound, upper extremity	16	Contusion, lower extremity	10
Wound, upper extremity, gunshot	1	Sprain, lower extremity	2
Wound of hand, poisoned	24	Wound, lower extremity	7
Fracture of humerus	1	Fracture, both bones of leg	1
Fracture of radius, compound	1		
Fracture both bones of forearm	1		

Since its establishment three deaths have occurred at the station from the following causes: Alcoholism, 1; apoplexy, 1; fracture, vault of skull, with laceration of brain tissue, 1.

EXCISION OF THE EYEBALL.

By Acting Assistant Surg. W. H. HEARD.

C. S. (colored); age, 31 years; nativity, Tennessee; deck hand on the steamer *A. R. Bragg*, of Memphis; was admitted to hospital at Newport, Ark., on April 10, 1893, suffering with neuralgia of eyeball. Cause: Gonorrheal ophthalmia.

History.—On October 12, 1892, he was admitted to this hospital suffering with gonorrhea. During the time a severe ophthalmia developed in the left eye, for which he was treated, and progressed favorably up to November 20, when he deserted, and nothing more was heard of him until he presented himself as above stated.

He was treated with the usual neuralgia remedies. Nothing seemed to give relief except hypodermic injections of morphia and atropia or large doses of sulphate of morphia internally; he would have periods of relief for two or three days when severe exacerbations of pain would return and last for at least twenty-four hours.

About April 18 I discovered that he was suffering with panopthalmitis and proposed to him the excision of the eyeball as the means of relief, but failed to obtain his consent, and from time to time I urged upon him the necessity of the operation.

About May 1, the right eye becoming weak and inflamed, he gave his consent to have the diseased eye taken out.

May 3, 10 a. m.—Drs. Owen, P. Pool, and Jones being present, he was placed upon the table, the parts well sponged with a warm bichloride solution 1 to 2,000, then chloroformed and the lids separated with improvised retractors made of hairpins. On attempting to pinch up the conjunctiva the central portion was found disorganized, and a bistoury was necessary to dissect through the capsule of Tenon. The oblique and straight muscles were severed near the sclerotic coat, the recti were caught up with a hook and divided in like manner; after several clips with the scissors the globe was tilted forward and the optic nerve severed obliquely near the sclera, when the globe was easily removed. Hemorrhage was controlled by pressure for a few moments with the index finger; the cavity was then syringed out with a warm bichloride solution 1 to 1,000. In about thirty minutes the patient was put in bed, absorbent cotton with bandage was placed over the eye and left until evening. At 6 p. m. the patient was found resting comfortably; quarter grain sulphate of morphia was ordered to be given at bedtime.

May 4, 9 a. m.—Patient resting well. Temperature normal. Bandage removed and cavity syringed with warm bichloride solution 1 to 3,000. Thereafter there was no untoward symptom. The patient slept well at nights without the use of narcotics. The cavity was syringed out daily with a weak bichloride solution, fresh cotton and bandage being applied each day. He was discharged on May 23, fully recovered, with good stump.

REPORTS OF FATAL CASES WITH NECROPSIES.

REPORTS OF FATAL CASES WITH NECROPSIES.

INFLUENZA.

CASE 1.

Ulcerative endocarditis.

A. S.; age, 26 years; nativity, Georgia; admitted to the Marine Hospital, Memphis, Tenn., December 16, 1892; died March 13, 1893.

History.—The patient developed an attack of influenza while in the hospital under treatment for gonorrhea and orchitis. He had sore throat, pains in the chest, pain over the lower portions of the ulnar and radial nerves of the left arm, pain in the head, a petechial eruption sparsely scattered over the body, cough, and fever. Symptoms of pleuritis on the left side appeared. Paresis of the extremities developed, and anesthesia of the upper extremities extending to the shoulders and anterior chest wall. The face, neck, and scalp also became anæsthetic, and the lower extremities were affected to a less degree in the same manner. The anesthesia was accompanied by pain in the hands and wrists. January 3 the circulation began to be affected. The heart beat was reduced to 60 per minute and was unrythmical, with reduplication of the second sound. There was no valvular murmur. Later on, pericarditis developed. The patient's symptoms varied in severity at times, but his condition grew gradually worse until death took place.

Necropsy (period after death not noted).—Body emaciated. *Rigor mortis* present. The lungs were universally adherent. The lung tissue was crepitant and floated, and was normal in appearance, but very pale. The bronchial glands were enlarged; some of them were cheesy. The pericardial sac contained a small amount of serum. The parietal layer of the sac showed a few small granular deposits; there were no adhesions. Patches of exudate were scattered over the surface of the heart. Some of them were organized and contained blood vessels; others were mottled with patches of extravasation. A few patches of extravasation were seen beneath the normal portions of the visceral pericardium. The surface of the right auricle was covered with small gray masses, rough to the touch and having the appearance of tubercles. The heart muscle was flabby and anemic. The coronary arteries were degenerated. Large decolorized clots were found in all the cavities ot the heart intimately adherent to the valves. A few patches of extravasation were found beneath the endocardium of the left ventricle. The mitral valve was thickened and covered with vegetations. The aortic valve was normal. The beginning of the aorta was slightly dilated just above the sinuses of Valsalva; its inner and middle coats had been destroyed by a small circular ulcer with ragged edges. This ulcer communicated with a cavity as large as a cherry, which was separated from the pericardial sac by only a thin layer of tunica adventitia. The tricuspid valve was thickened by vegetations. The pulmonary valve presented a remarkable appearance. One of the cusps was normal; the others were almost completely destroyed by ulceration, the stumps being represented by a mass of reddish-yellow granulations. Similar masses of granulations were seen on the endocardium and on the intima of the pulmonary artery immediately adjoining the diseased valve. The heart weighed 355 grams.

Abdomen.—The mesenteric glands were enlarged. The liver weighed 3,315 grams. Its surface was smooth and normal in color. It was granular on section. The spleen weighed 1,595 grams. Cicatricial depressions existed on its surface. There were also on its surface two large and thick masses of fibrinous appearance. The spleen pulp was firm and the connective tissue in it increased beyond normal. The organ contained hæmorrhagic infarcts. The enormous bulk of the liver and spleen had distended the lower chest and widened the costal arch. The kidneys were very pale, but apparently normal. The brain was not examined. The other organs were normal.

CASE 2.

Œdema of the lungs.

I. L.; aged 38 years; nativity, Mississippi; was admitted to the U. S. Marine Hospital, New Orleans, La., March 13; died March 25, 1893.

History.—Patient was much reduced in flesh and complained of heavy chills and high fevers for four days previously. He had suffered with a harassing cough for a month, and sought relief from severe pain between the shoulders and in small of back. Temperature on admission 38° C., rapidly rising, pulse 100, respiration 30, and superficial. He was given a hot bath, the abdominal viscera relieved by a mild purge, followed by an enema and full doses of quinine. A tonic and supporting treatment, with abundant nourishment, supplemented by a "cotton jacket," was instituted. Œdema of the lungs supervened and terminated the case.

Necropsy (*twelve hours after death*).—Body that of a muscular, well-nourished, very black negro man of middle age. *Rigor mortis* slight. Heart very small; weight, 215 grams. Pericardial sac distended with straw-colored serum. Lungs, both apices tuberculous and loaded with serum; left, weight 695 grams; right, 1,040 grams. Lungs attached to chest walls by numerous firm bands. Mesenteric glands enormously enlarged. Liver normal; weight, 1,790 grams. Kidneys: left, weight 195 grams; right, 175 grams. Spleen tuberculous, yellow in color; weight, 390 grams.

CASE 3.

General debility.

J. J.; aged 73 years; a native of Louisiana; was admitted to the U. S. Marine Hospital, St. Louis, Mo., January 11, 1893, and died March 1, 1893.

So far as could be elicited, his family history was good. He had had malarial fever several times. In the fall of 1892 he had la grippe, and could not gain strength after this attack. He felt weak and there was dyspnœa on the slightest exertion. He had no cough. He experienced a dizziness at times. There were no adventitious sounds over heart or lungs. He failed steadily and died on the 1st of March, 1893.

Necropsy (*eighteen hours after death*).—There was some bronzing of the skin over both thighs. Both lungs adherent at apices by old pleuritic bands. All serous membranes normal. Lungs congested. Right weighed 810 grams; left, 750. They were congested, but crepitated. Heart small; valves normal. Aorta atheromatous in patches. Heart weighed 285 grams. Spleen congested and friable; weighed 310 grams. Kidneys atrophied. The cortical and medullary portion smaller than normal; capsules adherent. Right kidney weighed 105 grams; left, 115 grams. Liver atrophied at the expense of the hepatic cells. There was no thickening of Glisson's capsule. There were five stones in gall bladder, shaped like a grain of buckwheat and about twice as large.

CASE 4.

Gastro-enteritis.

H. L.; age 41; nativity, Germany; admitted to marine ward, Sisters' Hospital, Buffalo, N. Y., April 6, 1893. Died April 23, 1893.

History.—The patient, a sergeant of marines, U. S. Navy, had suffered for some weeks from symptoms of influenza, with great prostration. He grew steadily worse, and a gastrointestinal inflammation, with fermentation and toxæmia, which was the principal local manifestation of the disease, reduced him to such an alarming state that he was finally sent to the hospital. There he was treated with resorcin, salol, stimulants, and carefully regulated diet. For a time he rallied and improved somewhat. Then his appetite entirely failed, there was constant nausea; and, although he was very weak, it was determined to wash out his stomach. This was effected by means of the stomach tube, as the pain and other evidences of acute inflammation had greatly subsided. On withdrawing the tube there was violent retching during the act, and a little bloody mucus, mixed with contents of stomach, welled up by the sides of the tube. A little of this was probably inhaled and found its way into the bronchial tubes. About half an hour after there followed profound shock, then œdema of lungs and profuse frothy expectoration. Two hours later the heart failure was nearly complete, but the lung parenchyma was still resonant on percussion. The most vigorous measures failed to bring more than temporary relief, and within seven hours he died.

Necropsy (eighteen hours after death).—Post mortem lividity and rigor quite marked. General nourishment very poor. Heart and pericardium appeared normal· Aorta: Just below cœliac axis there was a saccular aneurysm, the size of a very small hens' egg, nearly solid with a fibrous laminated clot. Lung, left, œdematous, congested. Its pleural cavity contained some old adhesions, slight, stringy, bandlike, and unimportant. Lung, right, œdematous, congested, pleural cavity contained about 500 c. c. watery serum. Tongue coated, furred. Pharynx inflamed, chronic congestion and follicular inflammation. Stomach large, stretched, walls thin, mucous membrane atrophied, rugæ gone, macerated. Near cardiac orifice considerable area of erosion, hyperæmia—contained bile and semifluid matter. Orifices normal in size. Small intestine more or less inflammatory, congestion over greater part. Large intestine contracted, and attached by old and firm adhesions to gall bladder. Liver appeared normal in size and on section. Gall bladder, was shrunken, contained several light-gray, faceted stones, hard, light, with dark nuclei. Orifice of gall bladder obliterated by old inflammatory adhesion. No inflammation or pus. Kidneys: These appeared normal.

Cause of death.—There was probably a chronic atrophy, dilatation and catarrh of stomach. This, the weak point, was the first to give way under the attack of influenza, which was the determining cause of death. The immediate cause was shock and œdema of lungs, the effect of the procedure for lavage. The aneurysm was practically cured. The gallstones were encysted, and long since about as effectually disposed of as by operation. Neither of these conditions had anything to do with the result of the case, or gave any symptoms.

CASE 5.

Empyema of pleura.

H. D.; aged 53 years; nativity, New York; admitted to U. S. Marine Hospital Chicago, Ill., April 25, 1893; died, May 16, 1893.

History.—Had influenza on admission. Had been treated by a private physician previous to admission, with little benefit. Improvement rapid until three days before death, when he caught cold, and albumen was found in the urine. He died suddenly in epileptiform convulsions, probably uræmic in origin.

Necropsy.—General nourishment was good. *Rigor mortis* marked, and pupils slightly dilated. Lividity was slight. The heart, after opening, weighed 340 grams; the pericardial sac contained about 60 c. c. of fluid. An antemortem clot was found at both the aortic and mitral valves weighing together 60 grams. The left ventricle appeared pale and flabby. The pleural cavity contained adhesions posteriorly, and laterally a large circumscribed collection of pus was found, in amount about 500 c. c. The left lung was somewhat contracted; the right lung enlarged and weighed 550 grams. The liver weighed 188 grams. The kidneys showed evidences of chronic fibroid degeneration, the left less than the right. The left kidney weighed 175 grams, the right 150 grams. The spleen weighed 350 grams and appeared to be in a normal condition. The other organs were not examined.

DIPHTHERIA.

W. R.; aged 20 years; nativity, Missouri; was admitted to the U. S. Marine Hospital, New Orleans, La., January 25; died, January 27, 1893.

History.—The patient was brought in the ambulance from his boat, where he had lain abed for some two or three days, to the hospital. On admission, he was in a state of stupor from which he could with difficulty be roused. Milk and whisky, with soft boiled eggs, were given at frequent intervals, with beef essence and coffee, and the bichloride of mercury in small doses, 0.01 grams, every hour. The stupor gradually deepened to coma, terminating in death.

Necropsy (eight hours after death).—Body that of a young, muscular, well-nourished white man. *Rigor mortis* and postmortem lividity marked. Patches of diphtheritic membrane appeared at the angles of the mouth, openings of the nostrils, and around the anus. Throat only examined. Mouth lined with grayish, pultaceous, sloughing masses, which extended to larynx and pharynx, and into posterior nares. Parts swollen and congested, though not greatly reddened.

ENTERIC FEVER.

CASE 1.

Perforation.

H. B.; 17 years old; admitted to St. Vincent Hospital, Norfolk, Va., 9:30 a. m. and died same day, 12:30 p. m., December 2, 1892. Had been in hospital with a continuous fever up to November 21, 1892, when he was discharged, at his own request, to go home, after being warned that he was not well enough to leave. He worked continuously from that day till night previous to his readmittance, while suffering from pains in abdomen and light diarrhea. Condition on examination at 10 a. m.—state of collapse, pulseless, abdomen tender and swollen.

Diagnosis.—Peritonitis probably from perforation of the intestines. He never reacted sufficiently to permit an operation.

Necropsy (twenty hours after death).—Light, spare negro, in fair condition as to fat and muscular development. Abdominal cavity full of pus and inflammatory products. Intestines adherent to each other. A perforation at the extreme end of the ileum existed at the site of an old unhealed typhoid ulcer. There were several such ulcers in various stages of repair in the small intestines. Other organs not examined.

CASE 2.

Perforation of intestines—peritonitis.

E. M.; aged 46 years; nativity, Austria; admitted to the marine ward of the German Hospital, Philadelphia, Pa., December 14, 1892, and died December 18, 1892.

Patient was very ill when admitted. A clear history was unobtainable, but it was found that the patient had had a severe diarrhea for about three weeks. He was very much emaciated and weak, and had the appearance of a very old man. The abdomen was enlarged and tympanitic, and tenderness was noted on pressure over the right iliac fossa. The tongue was dry and cracked. On the evening of the 16th of December the temperature rose to 39.5° C.; the following morning the patient was much weaker and the temperature below normal. The patient sank rapidly, and on the evening of the 18th died. He did not seem to suffer much pain, and was conscious to the time of death.

On admission he was given small repeated doses of magnesium sulphate, morphine, and whisky. Later digitalis and strychnia were also given.

Necropsy.—Only the abdomen was examined. It was filled with thin pus. The lower two feet of the ileum were removed with the cæcum. The ileum was opened and large ulcers found throughout the lower portion. The gut was discolored, twisted on itself, and adherent, and one ulcer had perforated, allowing the escape of fæcal matter, causing peritonitis and death.

CASE 3.

I. S.; aged 23 years; nativity, Norway; admitted to Cleveland City Hospital August 6, 1892; died August 11, 1892.

History.—Had been sick more than two weeks, complaining of headache, fever, diarrhea, and vomiting. On admission there was noted tympanites, abdominal tenderness, irregular pulse, coated tongue, involuntary semifluid ochre-colored stools. Delirium soon came on, pulse became very feeble; wholly unconscious before death.

Necropsy (eighteen hours after death).—Livores and *rigor mortis* present. Emaciation. Heart rather small, but normal. Thoracic aorta normal. General recent adhesions of pleuræ on both sides. Both lungs congested. No inflammatory appearance of peritoneum. Small intestine: Peyer's patches and solitary follicles greatly thickened, surface soft, in places shreddy, and a few small "punched-out" ulcers. Large intestine: No ulcers, follicles markedly thickened and soft. Liver fatty, pale brown. Kidneys normal. Spleen about twice normal weight, consistence diminished. Brain not examined.

CASE 4.

F. G.; aged 27 years; nativity, Illinois; admitted to U. S. Marine Hospital, Cairo, Ill., December 26, 1892; died, January 5, 1893.

Necropsy.—*Rigor mortis* marked; general nourishment fair; pupils dilated; heart weight, 451 grams. Pericardial sac contained 50 c. c. light-colored fluid; openings normal and valves competent; cavity normal. Wall of left ventricle soft; right ventricular wall flabby. Aorta and subdivisions normal; nares normal; larynx and trachea congested. Left lung: Weight, 512 grams; pleural cavity normal. Right lung: Weight, 304 grams; pleura normal. Lungs floated, crepitation present, congested. Peritoneum inflamed. Gastrointestinal tract congested. Tongue dry, brown, and fissured. Pharynx normal. Œsophagus and stomach congested. Pylorus normal. Small intestines congested and ulcerated, remarkably so about ileocæcal valve. Large intestine congested, with a few ulcers in cæcum. Rectum congested. Liver slightly enlarged, hard, and congested; right side lighter in color than normal; left side darker than normal; weight, 1,250 grams. Gall bladder empty. Pancreas, weight, 208 grams. Left kidney: Weight 224 grams; capsule nonadherent; surface lobulated. Right kidney: Weight, 216 grams; capsule nonadherent; surface not so lobulated; pelvis and ureters congested. Bladder slightly thickened; suprarenal bodies normal—right weighed 4 grams, left weighed 6 grams; spleen congested, softer than normal, weighed 480 grams. Scalp, skull, and membranes normal. Brain weighed 1,536 grams. Spinal cord and membranes not examined. No microscopic examination. Perforation of ileum, leading to suppurative peritonitis, was the direct cause of death.

CASE 5.

E. S.; age, 23 years; nativity, Finland; admitted to U. S. Marine Hospital, Boston, Mass., January 2, 1893. At time of admission had been sick one week with chills, followed by rise of temperature, headache, anorexia, insomnia, and general malaise, soreness of muscles, dizziness, tinnitus aurum, tongue coated, and diarrhea. At this time there were no spots on skin of abdomen indicative of abdominal typhus. Temperature, $40\frac{1}{5}$° C.; slight cough with moist rales; in larger bronchi subcrepitant rales; no tenderness nor gurgling in right ileo-cæcal region; slight delirium of low-muttering type; later, delirium a greater part of time. Died January 20, 1893.

Necropsy (*twelve hours after death*).—Body that of a medium-sized white man, slightly built; right arm and leg more muscular than left; cicatrix on forehead at edge of hair about 1 cm. in diameter. Post-mortem lividity marked on most dependent parts of body and on sides of chest and neck. Post-mortem rigidity well marked. Thorax contained no fluid; pleura nonadherent; trachea and bronchi covered with viscid mucus. Right lung weighed 440 grams, free from pleural attachments; considerable œdema of posterior part, middle and upper lobes; hypostatic hyperemia of posterior part lower lobe right lung. Left lung weighed 400 grams; pleura nonadherent; posterior part of upper lobe somewhat œdematous; posterior inferior parts lower lobe decidedly congested, but no consolidation. Heart in normal position and small in size; in systole at time of death. Occluding right ventricle and passing into pulmonary artery was a large ante-mortem clot. The tissue of the heart was pale and anæmic; its valves competent, but weak and flabby; weight of heart, 290 grams. Spleen soft and pulpy; its tissue easily torn; weight, 150 grams. Left kidney weighed 220 grams; right kidney, 205 grams; both congested; capsule easily peeled; line between medullary and cortical substance well marked. Liver large and congested; gall-bladder normal and full of fluid, ducts patent; weight of liver, 2,040 grams. Stomach empty. Intestines moderately full of gas; at ileo-cæcal valve and for about 2 feet of the ileum above, Peyer's patches were inflamed and some were in stage of ulceration, presenting the characteristic lesions of enteric fever. Some of these ulcers were quite deep, leaving only the peritoneal coat.

CASE 6.

H. C.; age, 22 years; nativity, Ireland; admitted to U. S. Marine Hospital, Chicago, September 9, 1892; died October 1, 1892.

History.—Admitted after over a week's illness. Case progressed favorably for about two weeks, at the end of which time a relapse occurred, with high temperature, diarrhea, and marked typhoid symptoms. The heart held its own, but the respiration was markedly interfered with for some days before death, which almost seemed due to asphyxia.

Necropsy (*October 2, 1892, 11 a. m.*).—Post-mortem lividity and *rigor mortis* both marked. General nourishment poor. Pupils dilated. Circulatory organs normal. The left lung was collapsed and congested at the base, while the left pleura was bound by many elastic but not very strong or close adhesions. In the lower part of the ileum a dozen or more characteristic enteric lesions were found. The liver was large, congested, and pulpy; weighed 1,950 grams. Kidneys were normal, each weighing 250 grams. The spleen was congested and weighed 400 grams.

CASE 7.

A. S.; aged 22 years; nativity, Finland; admitted to the U. S. Marine Hospital, Baltimore, Md., October 15, 1892; died November 6, 1892.

History.—Sick about six days before he came into hospital; complained of pain in the head at first, then through body; felt hot; bowels loose, having two or three stools a day. Stools yellow and of offensive odor. On admission, pulse 84; temperature 37.4° C. Tongue coated and dry; some few rose-colored spots upon abdomen. No tympanites. Gurgling on palpitation, in region of ileo-coecal valve.

Necropsy (*fifteen hours after death*).—*Rigor mortis* well marked. Lungs: The posterior half of both lungs in a state of extreme congestion; this condition more apparent in the left. Lung tissue crepitated, and on section blood and frothy liquid exuded. Pleural cavity: Had a dry, red appearance; absence of liquid decidedly marked. Pericardium: Normal in appearance. . Heart: Normal in size; more fat than usual attached to it. Liver: Very much increased in size, extending about 2 inches below line of ribs and across into epigastric and left hypochondriac region; on section presented a yellowish appearance. Hepatic veins in a state of moderate engorgement. Spleen: Twice as large as normal, dark steel-blue color, soft and friable; substance broke on slight pressure into a dark, granular, amorphous mass. Intestinal tract: In a state of inflammation and ulceration for about 5 feet up from the ileo-cæcal valve. Some of the ulcers (about 5 feet above the valve) were 2 by 5 cm. in size and extended down to muscular coat of the intestine. In the region of the valve the ulcers were smaller and more numerous and apparently more advanced. Solitary glands hyperæmic. Mesenteric glands much enlarged and softened; some ruptured, with extravasation of blood into connective tissue of mesentery. All other organs normal.

CASE 8.

Pneumonia—Abscess of the Lung.

F. T.; negro; aged 24 years; nativity, Arkansas; was admitted to the U. S. Marine Hospital, Evansville, Ind., April 7, 1893; died June 5, 1893.

History.—For three weeks previous to admission he had been suffering with intermittent fever and constipation. On admission to hospital he was found to have high fever, remittent in character, with no rash, but pain in iliac region; no tremor. It was not until the second week that tympanitis was found on percussion; also enlarged spleen, tremor and stupor. His fever ran an irregular course, was very high, and about the third week he began to have hallucinations. A relapse was accompanied by subacute bronchitis and followed three weeks later by hypostatic pneumonia, with dullness and labored breathing, and from this time breathing was confined to the left side. From the time of the pneumonic complications there was a gradual sinking until death.

Necropsy (*six hours after death*).—General nourishment was very poor; *rigor mortis* imperceptible and pupils dilated. Bed sores were on hips, back, and external condyles of knee joints. On opening the thorax the left pleural cavity was found to be one-third full of fluid. Strong pleuritic adhesions were found both to chest walls and pericardial sac, especially on lower lobe. Left lung was in a highly congested condition, especially in the center. The walls of right pleural cavity had coalesced and were adherent to chest wall. The right lung was found contracted, and presented two large gangrenous abscesses. The blood indicated a condition of profound anæmia, and no coagulation had taken place. Pericardial sac was found nearly filled with viscid fluid. Heart was found in a condition of fatty degeneration, soft, flabby, and the walls of the ventricles were collapsed; the valves were normal. Spleen was enlarged and in a degenerated condition. Liver: Somewhat enlarged, soft, and adherent to intestines, kidneys, and diaphragm. Intestines: Catarrhal condition existed throughout small and large intestines. Ulcers were found which involved Peyer's glands, and the solitary follicles of transverse colon. In the small intestine ulcers were found just beginning to be covered with thin granulation tissue. There were also large ulcers found in the cæcum and colon. In the ileocæcal valve two large ulcers were found which were beginning to heal.

CASE 9.

J. M.; aged 23 years; nativity, Nova Scotia; diagnosis, enteric fever; admitted U. S. Marine Hospital, Vineyard Haven, Mass., August 25, 1892; died September 9, 1892.

Clinical history.—For past twenty days had been ill with headache and diarrhea of a yellowish color. Five days ago had chills and fever, and on admission had high fever; was somewhat delirious and very week. Body was covered with a light rose-colored rash, which disappeared in two days. Rose papules found on abdomen. Patient soon sank into a comatose state, had involuntary passages, was unable to swallow, and had to be nourished by enemata. Pulse was fairly strong though dichrotic. Died suddenly of heart failure September 9, 1892.

Necropsy (*twenty-six hours after death*).—Body much emaciated; no lividity or *rigor mortis.* Contents of thorax examined and found normal, except right lung, which showed evidences of old tuberculous disease. Abdomen opened and peritoneum found adherent to small and large intestines about ileo-caecal valve. Small intestine near valve contained thirteen large typhoid ulcers and several cicatrices of older ulcers evidently of recent date; liver congested; spleen enlarged and congested; kidneys congested, otherwise normal; bladder normal.

CASE 10.

M. J.; aged 30 years; nativity, Maine; admitted to the U. S. Marine Hospital, port of Boston, Mass., June 28, 1892; died July 5, 1892. He was very feeble on admission and no history could be obtained; low delirium; bowels rather loose, having about two operations daily. No appetite; very red and furred tongue; some tenderness in right iliac region. Patient occasionally recognizes those about him when he is spoken to. June 29, quinine sulphate produces no effect on the temperature.

Necropsy (*twenty-four hours after death.*—Post-mortem lividity present; *rigor mortis* present; general nourishment fair; pupils dilated. Pericardial sac normal. Weight of heart 285 grams. Cavities and walls of heart normal, valves competent. Extensive and very deep ulcerations of Peyer's patches for about 38 centimeters from ileo-caecal valve. Peritoneum very much congested along the site of the ulcers. Weight of liver 1,590 grams. Color normal. Kidneys normal in appearance; weight, left 142 grams; right 150 grams. Spleen congested; weight, 815 grams. Lungs normal in appearance.

CASE 11.

S. P.; aged 34 years; nativity, Maine; admitted to the U. S. Marine Hospital, Boston, Mass., September 20, 1892; died October 7, 1892.

This patient was admitted for pain in back, supposed to be due to sprain. In a few days he developed marked symptoms of typhoid fever. Patient was very stupid and a history was received with considerable difficulty.

Necropsy (*four hours after death*).—Post-mortem lividity considerable; *rigor mortis* present; general nourishment poor; pupils contracted. Ventricles and walls of heart normal; all valves competent; weight of heart, 252 grams. Pericardial sac normal. Left lung normal and without an adhesion; lung proper normal, save hypostatic congestion; weight, 592 grams. Right lung normal; no adhesion; hypostatic congestion; considerable bronchitis in finer tubes; weight, 677 grams. Ileum congested throughout with three ulcerated Peyer's patches; no perforation. Liver normal, save hypostatic congestion; color normal; weight, 1,665 grams. Gall bladder distended with yellow bile; no stones. Left kidney: capsule strips freely; structure looks normal; weight, 182 grams. Right kidney: capsule not adherent; structure normal; weight, 167 grams. Suprarenal bodies normal. Spleen looks larger than normal; capsule strips; weight, 316 grams.

CASE 12.

W. H.; aged 28 years; born in Texas; admitted to U. S. Marine Hospital, Louisville, Ky., October 15, 1892, on a diagnosis of diarrhea; readmitted October 22, with enteric fever; died October 25, 1892.

Necropsy (*ten hours after death*).—Heart and lungs apparently normal. Spleen greatly enlarged. Stomach natural in appearence. In the small intestine there were a number of ulcers and in the ileum, Peyers glands were enlarged and appeared as if excavated. Liver and kidneys not noticeably changed. No other organs examined.

CASE 13.

Perforation.

C. J.; aged 25 years; nativity, United States; admitted to the marine ward, German Hospital, Philadelphia, Pa., January 26, 1893; died February 5, 1893.

Patient was brought in the ambulance, and in the first week exhibited the signs and symptoms of typhoid fever. Milk diet, sponge bath, phenacetin and quinine were ordered. The temperature at times rose to 40° C. On February 1 the temperature fell to 36° and then rapidly rose to 40°. The abdomen became very tender and tympanitic. Hiccoughing and vomiting commenced, patient failed rapidly, and died in collapse.

Necropsy revealed the following: The heart had undergone granular change. Lungs congested and œdematous. Stomach normal. Liver and spleen enlarged. The abdomen contained pus and the intestines were inflated and full of gas. A portion of the gut was opened and ulcers were found throughout the lower 66 centimeters of the ileum. At a point 5 centimeters above the ileo-caecal valve a perforation had occurred and there was an area of inflammation about it. The walls of the gut were boggy and oedematous.

CASE 14.

J. J.; aged 27 years; nativity, Norway; was admitted to Marine Hospital, Stapleton, Staten Island, November 14, 1892; died December 12, 1892.

History.—Patient stated that for two weeks he had been suffering from irregular slight chills followed by fever. At time of admission there were vertigo, dyspnœa, cough, anorexia, and constipation. Temperature 39° C., pulse 68, respiration 20. His body was well nourished. Face was red and flushed. Center of tongue was covered with a dirty white coat, the edges were red. Mucous rales were heard in both lungs. Heart normal. Liver and spleen apparently normal. Papular eruption on shoulders, back, chest, and legs. During the succeeding days the usual symptoms of enteric fever presented themselves. November 29 his temperature was normal and remained so for forty-eight hours. December 1 it began to rise, and on the night of the 3d it reached 40.2° C. On the evening of December 7 patient complained of severe pain in the abdomen. At midnight there were two large evacuations from the bowels, each containing a considerable quantity of fresh blood. Next morning patient appeared weak and feeble, pulse was rapid, respiration hurried. The hemorrhage evidently so exhausted his vitality that he could not rally. Subsultus tendinum and delerium came on, patient gradually failed, and died December 12, 1892.

Necropsy (twenty-three hours after death).—Both lungs were pale and collapsed; right was adherent to diaphragm; left was adherent at apex and base; both lower lobes were congested. Heart reduced in size; the valves were normal. Liver was pale and adherent to diaphragm. Spleen about twice its normal size, dark colored, and tough under the knife. Peyer's patches in the lower part of the ileum were enlarged and ulcerated. Solitary follicles were in the same condition. The lower end of the vermiform appendix was ulcerated and contained a small quantity of pus.

INTERMITTENT FEVER, COLITIS, AND ULCERATION OF THE STOMACH.

J. Z.; aged 39 years; a native of England; admitted to the Marine Hospital, St. Louis, Mo., July 23, 1892; died August 2, 1892.

Family history was good.

Personal history.—He has had malarial fever seven or eight times; gonorrhea ten times. He had a sore on his penis in 1875, followed by an eruption on his skin. When admitted he said he had several thin stools daily. He complains of tenderness on pressure along the colon. His bowels have been in this condition during the last six weeks. On the day before he was admitted he said he had a chill, followed by a fever. His stools have never been so frequent since he was in the hospital in April. He continued to have some fever after his admission. The highest temperature was 39.4° C., which point was reached July 25, 1892. From July 26, 1892, his temperature was less than 1° above the normal until just before death, August 2, 1892, when it was 39° C.

Necropsy (*nineteen hours after death*).—*Rigor mortis* well marked. Parotid gland of left side swollen. No external evidence of syphilis. Lungs: Left lung and pleural cavity normal; right pleural cavity obliterated by firm pleuritic adhesions. Hypostatic pneumonia in posterior part of right lung. Weight of right lung 1,650 grams; of left, 735 grams. Spleen: Soft, capsule easily removed; weighs 280 grams. Kidneys small; otherwise normal. Beginning atheroma in aorta and on posterior flaps of mitral valves. Stomach congested in patches around cardiac orifice, and in places the mucous membrane shows ulceration. Twenty-five centimeters of the first part of the large intestine were intensely congested and contained several ulcers. In the sigmoid flexure the colon had many ulcers.

INTERMITTENT MALARIAL FEVER.

A. H.; aged 25 years; nativity, Norway; admitted to the U. S. Marine Hospital, Boston, Mass., November 2, 1892; died same day.

Patient was moribund when admitted to hospital and unable to swallow; he died three and a half hours after admission. He was brought to Boston from Provincetown on a steamer and left on the wharf, from which he was taken by the driver of a herdic and brought here. It was learned that he had had a severe chill every day for a week. On admission the temperature in the axilla was 39° C.; pulse full and regular; breathing somewhat labored and rales, indicative of profuse bronchial secretion, partly filling smaller tubes and embarrassing respiration; impairment of vesicular resonance.

Necropsy (*seventeen and a half hours after death*).—Post-mortem lividity slight. *Rigor mortis* marked. General nourishment good. Skin presented slight yellowish or jaundiced hue, evidently due to the breaking down of the blood, caused by malarial poisoning. Pericardial sac normal; contained about 30 c. c. of straw-colored fluid. All valves of heart competent; walls and cavities of ventricles normal; right ventricle contained small ante-mortem clot; weight, 336 grams. Both lungs deeply congested; bronchial tubes contained much mucus, due to bronchitis; weight, right 737 grams, left 527 grams. No pleuritic adhesions. Peritoneum congested. Liver very deeply congested; hepatic veins widely distended with fluid blood; normal in color; weight, 2,650 grams. Capsules of both kidneys strip freely. Kidneys much congested, but otherwise normal in appearance; weight, left 235 grams, right 250 grams. Spleen about double normal size, quite soft and congested; capsule not adherent; weight, 435 grams. Membranes of brain congested and sinuses very full of blood; free exudation of blood from puncta vasculosa on section of brain; weight, 1,495 grams. Microscopical examination of the blood showed an abundance of the malarial semi-lunar filaria of Osler in the corpuscles. Death due to profound malarial poisoning and subsequent exposure.

MALARIAL FEVER, REMITTENT.

CASE 1.

Waxy kidney.

S. McG.; aged 23 years; nativity, Arkansas; was admitted to the U. S. Marine Hospital, New Orleans, La., December 30, 1892; died January 14, 1893.

History.—Patient stated he had had a case of syphilis three months previously, but had recovered. For eight days previous to admission had a daily chill lasting from noon to 8 p. m., followed by high fever and heavy sweats. Abdomen slightly tympanitic, and painful on pressure. Heart sounds somewhat obscure. Temperature on admission 39.2° C., pulse 102, weak; respiration 30, superficial. Bowels sluggish. The patient was given a hot bath, put to bed, a brisk purgative given, and prompt and full doses of quinine. These proving unavailing, Lugol's solution of iodine and carbolic acid, with stimulation and enforced nourishment, were exhibited. The temperature continued high, and was apparently unaffected by treatment. The patient sank into stupor and died at 9.20 p. m.

Necropsy (thirteen hours after death).—Body that of a muscular, somewhat emaciated, young negro man. Heart, weight 282 grams, coated with fat; tricuspid valve incompetent, and leaflets perforated. Lungs congested hypostatically, but with the plural cavaties normal; weight, left 320 grams, right 335 grams. Large intestine showed several small ulcers in mucous coat, with invagination to extent of 4 cm. Liver normal; weight, 1,995 grams. Gall bladder distended with bile. Kidneys softened and waxy; capsules detached with difficulty; weight, left 267 grams, right 252 grams. Glands of mesentery enlarged and very hard. Spleen, weight 317 grams, soft; on section numerous white points were found.

CASE 2.

Pericarditis.

H. W., colored; aged 22 years; a native of Missouri; admitted to the Marine Hospital, St. Louis, Mo., October 25, 1892; died November 2, 1892.

Family history not good. Has never been sick but once before. In 1890 he was sick in the Marine Hospital at New Orleans, La. He has had a diarrhea twenty days. Five days before admission he was confined to his bed with a pain in his tooth. He says the pain from his tooth went to his head, and then to his shoulders. He had a slight cough. He has not had any chill. Appetite poor. Says he had not eaten anything for a week before his admission. He complains of slight nausea. Sputa slightly tinged with blood. No dullness. A few coarse rales. Respiration rapid and variable, sometimes 30 and sometimes 25 per minute. There was a rise of temperature of two degrees every evening, falling to 38° C. each morning.

Necropsy (thirty-six hours after death).—The heart was covered with false membrane. There were 150 c. c. of fluid in the pericardium. The spleen was much enlarged, its tissure soft and pulpy. It weighed 835 grams. Liver enlarged and tissue soft. It weighed 2,450 grams.

CASE 3.

T. S.; aged 23 years; born in Ohio; admitted to U. S. Marine Hospital, Louisville, Ky., April 16, 1893; died April 19, 1893.

Necropsy (twelve hours after death).—Right pleuritic adhesion to small extent. Right lung somewhat congested. Heart hypertrophied. Spleen large and congested. No noticeable changes in other organs.

CASE 4.

M. M.; aged 26 years; a native of Ohio; admitted to the Marine Hospital, St. Louis, Mo., on August 30, 1892; died September 2, 1892.

His family history was good. Had an ulcer on his penis three months ago. Three days ago he began to have pains in the back of his neck and in his back. He vomits occasionally. He has a chill followed by a fever every second day. Has no desire for food.

Necropsy (eight hours after death).—All viscera normal except the spleen. The spleen was very much enlarged. Capsule adherent to peritoneum. There were fibroid patches on the convex surface. Capsule much thickened. The substance of the spleen was dark brown in color and soft. The whole substance of the spleen was disorganized. The constituent elements were not recognizable. It weighed 600 grams.

PERNICIOUS MALARIAL FEVER.

J. B. (colored); aged 44 years; nativity, Missouri; admitted to the U. S. Marine Hospital, Cairo, Ill., September 30, 1892; died October 1, 1892.

History.—Patient was brought in by the ambulance in a semi-comatose condition, and was unable to give any account of himself. Was given hot sponge bath immediately and placed in bed; eyes half-closed, lips separated, tongue heavily coated with light-brown fur. Respiration was 25 per minute, and labored, alæ of nose working at each attempt. Pulse at wrist was hardly preceptible, rapid, weak, but regular. Temperature in the axilla was 39° C. Extremities cold to knees and elbows. The pupils were normal. Stimulants were administered at once in repeated doses. Patient gradually sank; could take no nourishment.

Necropsy.—Rigor mortis marked. Pupils somewhat dilated. General nourishment fair. Pericardial sac obliterated by recent adhesions. Heart weighed 378 grams; aortic valves calcareous; vessels normal. Nares, larynx, and trachea normal. Pleural cavities normal. Left lung, lower lobe œdematous; both lungs congested. Peritoneum normal. Digestive tract normal. Liver weighed 1,554 grams, hyperæmic and of pulpy consistence. Gall bladder normal. Pancreas slightly injected. Kidneys congested; weight of each, 140 grams; capsule nonadherent. Bladder empty. Prostate and urethra normal. Spleen enlarged, hyperæmic, and pulpy; weight 308 grams. Brain congested. Cord not examined.

BERIBERI.

J. M.; aged 30 years; nativity, Nova Scotia; admitted to U. S. Marine Hospital, Vineyard Haven, Mass., August 21, 1892; died August 24, 1892.

Clinical history.—After several months' residence in Brazil, patient shipped on *Rosa Mueller.* Twenty days before admission, was taken sick with severe darting pains in feet, which soon became œdematous. The pains increased and were felt in legs, then the thighs, back, and then became general. The œdema followed the pain as far as the waist, the hands and face not being affected. Had several vomiting attacks, and on admission was unable to retain any food at all. Bowels were constipated; urine scant and high-colored. Examination showed marked œdema of legs and abdomen. Patient complained of intense pains in back, shooting around over abdomen and into thighs. After admission appetite was good and bowels regular, but pains continued and suppression became more marked each day, the amount of urine passed being about 10 ounces, yellowish and opaque. Pulse good and temperature normal; vomiting ceased. Suddenly, and without any delirium or coma, patient died.

Necropsy (*twenty-six hours after death*).—Body well nourished; *rigor mortis* slight. Heart: Cavities enlarged, walls thinner than normal, cavities filled with clots. Heart tissue softened and fatty; pericardial sac contained some serous fluid. Lungs normal; pleural sacs contained slight amount of reddish serous fluid. Other organs normal, except kidneys and bladder. There seemed to be but one kidney, semicircular in shape, much larger than two normal kidneys, resting on each side and across spinal column. The two ureters were normal. On section kidney appeared dark and was hard to the touch, but macroscopical appearance indicated a perfectly healthy kidney. Bladder congested and thickened. Prostate large, slight stricture existed in membranous urethra.

PHAGEDÆNA OF THE GROIN.

Catarrhal inflammation of the intestines.

W. A. (colored); aged 28 years; a native of Missouri; was admitted to the Marine Hospital, St. Louis, Mo., on June 7, 1892, and died July 9, 1892.

History.—Aside from venereal diseases he has always been well. Nine months ago an ulcer appeared on his penis which he could not cure. Three months ago the inguinal glands became inflamed. These glands suppurated, and the skin was destroyed. Four glands appeared on the base of an ulcerating surface. In size the smallest was as large as the meat of a Brazil nut; the largest twice that size. The suppurating surface was 10 cm. long, 8 cm. wide, and the glandular part 2 cm. in elevation. There was an evening rise of temperature of 1°. He had slight dyspnœa. June 21 all of the glands that could be reached were removed. The inguinal, femoral, superficial, and deep, and some of the pelvic glands were removed. The operation was deferred several days on account of phlebitis of the femoral vein and œdema of the right leg. All of the pelvic glands were not removed because the debilitated condition of the patient would not warrant it. The patient did well after reaction was established. On July 7, 1892, he began to fail fast from catarrhal inflammation of the intestines. His temperature was 40.1°C. on the 7th of July. July 8 it was, in the morning, 36.8°C. July 9, in the morning, it was 36.4°C. He died at 10.45 a. m.

Necropsy.—Pupils dilated. *Rigor mortis* not well marked. Wound by which the glands were removed was 20 cm. long, four-fifths of which was below Poupart's ligament, 13 cm. in breadth, and 5 cm. deep. The transversalis fascia and peritoneum form the floor of the upper part of the wound. The spermatic cord was exposed from the internal ring to the pubic bone. The walls of the long saphenous vein are greatly hypertrophied and feels like a small cord. There is a small lumen. There is a clot in the femoral vein 8 cm. from Poupart's ligament. The thrombus proper is 2 cm. long. The other parts of the thrombus are formed one above and one below the thrombus proper. The part above the original thrombus extends to the opening of the profunda vein. The whole thrombus is 11 cm. long. The right femoral artery is thicker than the left. There are suppurating glands along the outer and inner side of the right external iliac artery. The intima of both right iliac vein and artery is smooth. Spleen: Enlarged, weighed 400 grams. Kidneys: Capsules of both easily removed; right soft and friable; left contained several retention cysts. Heart: Normal; stopped in systole. Aorta atheromatous. Liver: The liver was covered on its external surface with white and gray patches, slightly elevated; the gray patches are larger than the white. There is a chain of lymphatic glands in various stages of degeneration, extending from the wound to the under surface of the liver.

SECONDARY SYPHILIS.

Case 1.

Ulceration of the epiglottis—Tuberculosis of the lungs.

W. F.; aged 28 years; nativity, Ireland; admitted to U. S. Marine Hospital, Chicago, Ill., April 10, 1893; died June 9, 1893.

History.—When admitted the most prominent symptoms were those referable to the throat. There was great hoarseness, with pain and difficulty on swallowing. A peculiarly disagreeable odor was emitted from the throat. Laryngoscopic examination showed a lateral ulceration of the epiglottis, which had proceeded to such an extent as to destroy one side of the organ. The loss of epiglottidean substance resulted in the frequent passage of particles of food into the larynx, producing violent attacks of dyspnœa and subacute laryngitis and œdema. The patient gave a history of syphilis, and was put upon specific treatment. He grew thinner, however, and his strength gradually failed. He could not talk above a whisper. Toward the end he had cough, and examination showed that a tubercular condition of the lungs existed, becoming constantly more aggravated. He died on the sixtieth day after admission.

Necropsy.—The general nourishment of the body was extremely poor. *Rigor mortis*, slight. The heart was pale and flabby and weighed 300 grams. The valves were competent. Respiratory organs: The larynx and upper portion of the trachea were removed. The whole interior of the larynx was found to be highly œdematous, as were also the vocal bands. The left lung weighed 1,270 grams, the right 1,380 grams, and both were the seat of disseminated tuberculosis, and the left of a localized emphysema. The epiglottis showed no further changes than had been discovered on laryngoscopic inspection. The other organs of the body were not examined.

CASE 2.

Thrombosis of middle cerebral artery—Congestion and œdema of lungs.

H. J.; aged 50 years; nativity, California; was admitted to U. S. Marine Hospital, Chicago, Ill., July 7, 1892; died July 8, 1892.

History.—This patient had been in this hospital a few months previous to last admission, and was at that time under treatment for secondary syphilis, which manifested itself principally in the pharynx and larynx. These conditions disappeared under antisyphilitic treatment, and patient left hospital May 16, 1892. Whether this treatment was continued after leaving is not known.

July 6.—He was brought to hospital in police ambulance; was in an unconscious condition. Examination revealed no injury; but he had hemiplegia of right side, not however involving the face. Corners of mouth were not drawn to either side; movements of eyes and eyelids perfect; tongue protruded without deviation. There was no impairment of sensation of touch or pain; pupils were normal; patellar and plantar reflexes present. He was dull and listless, made no attempt to speak, and did not seem to understand when spoken to; audition and vision were apparently unimpaired. Pulse, 48 per minute; evening temperature, 35.2° C.

July 7.—Temperature at noon, 36° C.; in evening, 36.2° C. Breathing was at no time difficult, irregular, or sterterous; 18 per minute. Urine drawn with catheter; no movement of bowels. With some difficulty he was made to swallow a little brandy and water; has vomited bilious matter several times.

July 8.—Shortly after an attack of vomiting a quantity of serous, greenish fluid, the patient died; pupils were somewhat dilated and there was a little froth in the mouth.

Necropsy (five and a half hours after death).—Height, 147 cm., circumference at shoulders, 100 cm.; post-mortem lividity marked; *rigor mortis*, slight; general nourishment very good; pupils slightly dilated. Nares filled with œdematous fluid; left lung weighed 700 grams; right, 870 grams; there were no adhesions in the pleural cavities, and in the apex of each lung there was a cicatrix without adhesions. Peritoneum was normal. Both lungs were congested. The mucus membrane of the stomach was congested mostly toward the cardiac orifices. Large intestine was distended with gas at sigmoid flexure. Gall bladder and ducts full of bile. Kidneys were both intensely congested; their combined weight normal. On the scalp there was a contusion 2 cm. square over muscular attachment to middle of temporal ridge, not visible externally. On removing calvarium the longitudinal sinus was ruptured, and a large amount of blood escaped. The membranes of the brain were congested and somewhat œdematous. There were some firm adhesions to dura in median line about the vertex. Weight of brain normal; softening general on the left side; most marked about Island of Reil and anterior and middle lobes; thrombosis of middle cerebral artery. About 200 c. c. serum were removed from left tunica vaginalis; testicle enlarged and peculiarly flattened. The patient was known to have had severe manifestations of secondary syphilis a few weeks before. The course of the case as observed would indicate thrombosis as a result of syphilitic atheroma; first, in the left middle cerebral. From this, the condition when admitted, he was considered in a fair way to partially recover. Later, by an increase in the size of the clot, the other branches of the left internal carotid were gradually occluded, bringing on extensive congestion and œdema of the meninges, softening of the brain, and such interference with respiration and cardiac action that congestion of lungs and œdema resulted.

CASE 3.

Hepatic gummata.

S. S.; aged 41 years; nativity, Maryland; was admitted to Marine Hopital, Stapleton, Staten Island, October 13, 1892; died December 22, 1892.

History.—Patient had been vomiting occasionally for three months. Ingestion of food produced pain in the epigastrium, which was relieved by vomiting. There was considerable thirst; cough, with a moderate amount of whitish expectoration, caused some annoyance. Bowels were fairly regular. He had used alcoholic drinks to excess for years. Body was poorly nourished. Tongue covered with a light gray coat. Respiratory murmur was feeble, and mucous râles were heard in both lungs. Abdomen tympanitic. Very tender just below xiphoid cartilage, also over entire upper part of the abdomen. Deep pressure could not be made because of excessive tenderness. Patient vomited very little after admission. The pain persisted, but was relieved by small doses of opium. Diarrhea alternated with constipation. Tympanitis continued. The appetite, poor and capricious from the first, gradually failed and with it the patient's strength. He evidently died from inanition.

Necropsy (*twenty-one hours after death*).—*Rigor mortis* marked. Body extremely emaciated. Pericardial fluid normal. Heart very small. Antemortem clots in pulmonary veins and right ventricle. The valves were normal. Lungs small and congested. Peritoneal cavity contained a large quantity of serous fluid. The intestines were distended with gas. Liver increased to twice its normal size. The surface was covered with gummata, varying in diameter from 5 to 15 cm. It was tough under the knife, and the gummata extended through the liver substance. Many of the larger ones had broken down, and in their centers was thin, dirty pus. Stomach contracted to one-half its normal size. The walls were thickened, and about the pylorus they were 1 cm. in thickness and as tough as cartilage. The spleen was about 5 cm. in diameter, pale and tough. Pancreas contained gummata and was adherent to the transverse portion of the duodenum. The kidneys were very small and pale, malpighian pyramids indistinct; cortex, thin. Bladder contained a small quantity of pale urine.

CASE 4.

Colitis.

P. R.; aged 29 years; nativity, Louisiana; was admitted to the U. S. Marine Hospital, New Orleans, La., May 2, 1893, and died May 14, 1893.

History.—The patient had been in failing health for some months. On admission he was much emaciated; intellection slow; temperature and pulse normal; complained of pain in right side of head. The abdomen, scrotum, and inner aspect of thighs were thickly covered with a dry, scaly eruption. Glands enlarged throughout. Frequent and annoying dysenteric dejections, which toward the end were passed involuntarily, rapidly reduced him. A guarded specific treatment with tonics and stimulants was begun, but abandoned for sedative and supporting measures. Coma was followed by death in ten hours.

Necropsy (*ten hours after death*).—Body that of a muscular, very black, negro man, extremely emaciated, with frequent spots of scaly eruption. *Rigor mortis* well marked. The arteries throughout were atheromatous; heart fatty, lungs slightly adherent to chest walls; weight, left 557 grams, right 554 grams. No tubercles found. Pleural cavities almost obliterated. Liver somewhat fatty; weight, 1,572 grams. Kidneys loaded with fat and congested; weight, left 469 grams, right 380 grams. Spleen soft; weight, 205 grams. On removing the brain cap the membranes were found studded with syphilitic tubercles, especially on right side in mastoid region. Brain, weight 1,380 grams. A large umbilical, easily reducible hernia, which was evidently of long-standing, was found.

CASE 5.

Tumor and abcess of the cerebrum and cerebellum.

W. R.; aged 25 years; nativity, Tennessee; negro; admitted to U. S. Marine Hospital, Evansville, Ind., April 20, 1892; died July 11, 1892.

History.—Primary syphilis two years ago, followed by but few of the ordinary manifestations of secondary syphilis. In January, 1892, had a transitory attack of paralysis affecting the left hand, accompanied by twitching of the muscles of the left forearm and arm; tinnitus aurium, vertigo, disturbances of vision, and loss of muscular power in the left side generally. Present condition: Bowels constipated, frequent vomiting, especially in the evening, pulse irregular, temperature normal. Right tendon reflex absent, slightly decreased on left side. Has headache on right side, vertigo, and staggering gait. Sensation almost abolished in left upper extremity, and frequent twitching of muscles, chiefly in left hand. Dynamometer, right hand 47½, left 8½.

April 29.—Under influence of large doses of potass.-iodide and mercurial inunction there has been considerable improvement. Now has no headache, less frequent attacks of vertigo, and voluntary movements are more coordinate. Still has twitching of the muscles of left extremities and face. Dynamometer, right 62, left 23.

May 6 to 10.—Severe headache and feeling of constriction, diplopia, vertigo, and muscular twitching. Dynamometer shows muscular power in left hand increasing.

June 3.—Symptoms more severe; voice husky, dry cough, strabismus, and fever in the evening. During June the symptoms increased in severity, patient grew weaker from the continued fever, vomiting, etc. The voice was almost entirely lost, and double vision was constantly present. Later there were hallucinations; the vital functions gradually declined, and death from exhaustion occurred July 11.

Necropsy (*eleven hours after death*).—*Rigor mortis* was established. Heart, left ventricle hypertrophied; right, dilated and wall thin, valves competent. Lungs, old pleuritic adhesions on both sides, and both lungs contained numerous hard cheesy nodules. Liver, normal; pancreas hard and adherent to spleen, the latter being very large and soft; mesenteric glands very much enlarged. Kidneys both lobular and of rather large size, but otherwise normal. Brain and membranes: Dura adherent along margins of longitudinal fissure, arachnoid congested, opaque, and contained considerable fluid. Four gummatous tumors, each about two and one-half centimeters in diameter, found in the superior frontal and superior parietal convolutions along the margin of the longitudinal fissure. They all involved the gray matter, and extended into the white. The one in the frontal convolution had undergone partial softening and absorption. The left cerebellum was almost entirely destroyed by a nodular cheesy growth, which had partly broken down, and contained in its center a quantity of thin, watery pus.

ALCOHOLISM.

CASE 1.

Lobar pneumonia.

P. T.; aged 46 years; nativity, Ireland; admitted to the Marine Hospital at Chicago, Ill., May 24, 1893; died May 30, 1893.

History.—The patient was a chronic alcoholic. Just previous to admission he had started upon a large and what promised to be a protracted spree, but he developed delirium tremens and was sent to the hospital. On admission he had fever, and examination showed the existence of consolidation on the right side, and very suspicious signs on the left. The patient became delirious and remained so until death, which took place on the seventh day after his admission to hospital.

Necropsy.—The general nourishment was good. The heart was normal and weighed 420 grams. The left lung was much congested, and weighed 650 grams. The right lung was very heavy, weighing 1,560 grams; the upper lobe was completely hepatized, while the remainder of the lung was congested. The liver was light in color, weighed 2,469 grams, and showed increase of connective tissue and amylosis. The kidneys were sclerotic to a slight degree, the left weighing 200 grams and the right 290 grams. So far as macroscopic appearances were concerned, the other viscera were normal. The spleen weighed 250 grams.

CASE 2.

Cerebral hemorrhage.

D. J. H.; aged 42 years; nativity, Canada; admitted to U. S. Marine Hospital, Chicago, Ill., April 25, 1893; died April 28, 1893.

History.—On admission was suffering from alcoholism. He complained of some pain in the face, apparently due to neuralgia of the third nerve. Soon after admission, without noticeable premonition, he became unconscious, showing signs of cortical irritation, the most noticeable being spastic contraction of the fingers and arm (left). During the 27th he became much weaker and was given hypodermatic injections of digitalis and whisky, and hot bottles were applied to the extremities. All efforts proved unavailing, and on the following day, April 28, 1893, the patient died.

Necropsy.—The body was fairly well nourished; there was considerable post-mortem lividity, and very marked *rigor mortis.* The pupils were dilated. Nervous system: The head and scalp were normal, and when the latter was removed there were no visible signs of injury to the skull. The calvarium was then removed; the dura mater, arachnoid, and pia were all congested. Blood was found extravasated over a considerable portion of the right hemisphere in front of the fissure of Rolando and above the fissure of Sylvius. No distinct ruptured vessel could be found. The brain weighed 1,500 grams. The other viscera were not examined.

ACUTE ALCOHOLISM.

Lobar pneumonia.

J. L.; aged 36 years; nativity, New York; admitted to U. S. Marine Hospital, Chicago, Ill., March 10, 1893; died March 17, 1893.

History.—Was suffering from acute alcoholism when admitted; developed lobar pneumonia in right lung shortly after, and died on the seventh day.

Necropsy.—Body well nourished; lividity marked, as was *rigor mortis;* pupils normal. Pericardial sac thickened, and contained a small amount of fluid. Heart normal and contained post-mortem clots. The left lung was congested; weight, 680 grams, otherwise normal. Right lung was seat of inflammation, involving the whole of the lower lobe, and was in the stage of red hepatization; weight, 1,880 grams. Liver was enlarged; connective tissue increased, was lighter in color than normal, and congested; weight, 2,810 grams. Both kidneys seat of chronic interstitial nephritis, with increased connective tissue; markings distinct; weight of left, 265 grams; right, 240 grams. Spleen enlarged; connective tissue increased, and congested. Other organs not examined.

RHEUMATIC FEVER.

Endocarditis; aortic and mitral lesions.

J. P.; aged 59 years; nativity, New York; was admitted to Marine Hospital, Stapleton, Staten Island, N. Y., November 16, 1892; died December 10, 1892.

History.—Patient had been suffering for one week with pain and tenderness in right wrist, both shoulders, and left ankle; had cough with white, frothy sputa; suffered from palpitation of the heart and dyspnœa on exertion; said that he had syphilis several years ago; physical examination showed a well nourished body; tongue free from coating, but large and flabby; coarse and fine mucous râles heard over both lungs; there was an aortic obstructive and a mitral regurgitant murmur; right wrist and left ankle swollen, very tender and painful. Rheumatism left him in about ten days. His bowels were sluggish from the first, and December 5 symptoms of enteritis appeared, which persisted till his death. At midnight, December

10, patient had an attack of heart failure from which he rallied. During the afternoon of December 11 he arose from bed and attempted to walk across the ward, but had taken only a few steps before he fell. He was found pulseless and gasping for breath; surface of body suffused with cold sweat; face cyanotic. Hypodermic administration of heart stimulants revived him temporarily, but in a few minutes the signs above-mentioned reappeared. The heart failed to respond to stimulants and the patient died at 4:15 p. m. The pupils were at first unequally contracted, but later both dilated.

Necropsy (eighteen hours after death).—There was marked post-mortem rigidity and hypostatic congestion. Brain apparently normal. Both lungs in situ appeared partially collapsed. Lower lobe of the right lung adherent in places to the chest wall; base congested. Left lung adherent at the apex; congested at the base. Left ventricle of the heart hypertrophied; right dilated. Segments of aortic valve atheromatous. The mitral and tricuspid valves were thickened and covered with vegetations. Liver venously congested and slightly fatty. Spleen and kidneys apparently normal.

RHEUMATISM, ORGANIC STRICTURE OF THE URETHRA, AND MALARIAL FEVER, INTERMITTENT.

A. W., aged 51 years; a native of Tennessee; admitted to the U. S. Marine Hospital, St. Louis, Mo., March 5, 1893, and died April 8, 1893.

Patient had been a man who drank a great deal of whisky. He usually had a spree every month. While on a spree he ate scarcely anything, and slept where night overtook him. While on one of these sprees just before his admission he was out in a storm. After that he suffered considerable pain in various joints. It was for this pain that he first applied for relief. He had had malarial fever several times. He was readily relieved of his pains. He also had an organic stricture of the urethra. For this he was operated on March 27, 1893. March 30 he had a chill. He had a chill every second day thereafter until he died. There were no signs of pus forming anywhere, and the chills were considered to be due to malaria. The stricture was easily dilated and sounds readily passed. His kidneys did not perform their function satisfactorily, and during the last two days that he lived not more than 500 c. c. of urine were excreted. During the last twenty-four hours not more than 100 c. c. of urine were excreted.

Necropsy (twelve hours after death).—*Rigor mortis* well marked; has a cicatrix in left groin and one on right leg at the junction of the middle and lower third. Lungs: Old pleuritic adhesions of both lungs, more extensive on right side; right lung slate-colored in patches, and right upper lobe gangrenous. There were small cavities in the right upper lobe, full of a grayish-black fluid. Weight of right lung 1,300 grams; left upper lobe emphysematous; lower lobe hypostatically congested; weight, 737 grams. Heart, normal; weight, 410 grams. Spleen enlarged, soft and ready to break down; weight, 596 grams. Kidneys normal; right weighed 220, left 260 grams. Liver much enlarged; weighed 2,632 grams.

SCIRRHUS OF STOMACH AND PANCREAS.

A. A.; aged 47 years; native of Finland; was admitted to the U. S. Marine Hospital at Stapleton, Staten Island, N. Y., August 16, 1892; died September 8.

History.—Patient had been in hospital several weeks before with the provisional diagnosis of dyspepsia. He suffered from severe pain in the epigastrium; from nausea, vomiting, pyrosis, and obstinate constipation, and was weak, emaciated, and of sallow complexion. A large, hard tumor could be seen and felt in the left hypochondrium, well over to the side. The vomiting continued till finally neither food nor drink could be retained. The vomitus was grayish, and at times contained fresh blood, but more frequently small coagula of decomposed blood. Weakness and emaciation were progressive, and although patient was fed by nutritive enemata, his vital energies were finally exhausted, and his death resulted from inanition.

Necropsy (eighteen hours after death).—Body was extremely emaciated; heart small, walls thin, valves normal. There was a small post-mortem clot in the right side. Right lung adhered to chest wall and diaphragm, smaller than normal; middle and lower lobes congested, œdematous, and filled with a frothy exudate; lung partly collapsed. Left lung nonadherent; upper lobe apparently normal, lower lobe congested and slightly œdematous—general anthracosis. Stomach considerably dilated, and partly filled with grumous fluid. The lesser curvature was occupied by a scirrhous tumor 12 cm. in length, 5 cm. in width, and 3 cm. in thickness. The pylorus was surrounded by cancerous tissue of the same character, which constricted its caliber to 5 cm., and extended into the body of the organ for 8 cm. or more. Indurated lymphatic glands were scattered over the anterior and posterior surfaces. The pancreas was a large misshapen mass of scirrhus adherent to the contiguous structures. The liver was normal in size but pale; the left lobe somewhat elongated, hard and tough under the knife; right lobe apparently normal. The gall bladder was distended. The spleen was reduced in size, shriveled, atrophied, and pale. The kidneys were pale and small, the capsule nonadherent, cortex thin. The diaphragm was adherent to the pancreas and stomach, and was also involved in the disease. The peritoneum was adherent to the under surface of left lobe of the liver and anterior wall of the stomach. The mesenteric glands were greatly enlarged and indurated, and the mesentery was adherent to the stomach. Other organs not examined.

SCIRRHUS OF THE STOMACH.

Bright's disease.

L. V.; aged 43 years; nativity, France; admitted to the U. S. Marine Hospital, Boston, Mass., October 15, 1892; died December 19, 1892.

On admission had been suffering for several months with epigastric pain, which was made worse by eating. Often vomited just after eating. General rheumatic pains. Left hand was swollen and painful. Lost much flesh. Rheumatism relieved by appropriate treatment. Patient developed phlebitis of both internal saphenous veins; feet and legs swelled and were very painful. Slept very little on account of the pain. Trace of albumen in urine. Dropsical effusion of connective tissue over whole body.

Necropsy (twelve hours after death).—Post mortem, lividity present. *Rigor mortis* marked. General nourishment fair. Left ventricle of heart slightly dilated, wall normal. Right ventricle and wall normal. Mitral valve incompetent on account of vegetations near edge preventing its perfect closure. Aortic valve competent. Vegetations about 5 cm. from edge of valves. Other valves competent. Weight of heart 430 grams. Pericardial sac contained about 60 c. c. of amber-colored serum. Long saphenous vein of right side examined and the coats found to be hardened and very much thickened. In feel it very much resembled an atheromatous artery. The lumen of the vein was almost obliterated by the thickening of the coats. Both lungs showed evidences of bronchitis and contained much bronchial mucus. Firm pleuritic adhesions at posterior portion and base of both lungs. Both pleuræ contained much clear serum. Weight of lungs: right, 960 grams; left, 880 grams. Scirrhus growth about 2½ inches in length involving pyloric orifice of stomach and almost closing it. Liver was quite hard, about normal in size, and contained a fatty deposit throughout and much increase of fibrin; weight, 2,360 grams. Pancreas hard and fibrous; weight, 135 grams. Kidneys contracted; sclerotic and lobulated; cortical portion almost obliterated; capsules adherent; weight: left, 162 grams; right, 110 grams. Spleen smaller than normal and hard; capsule strips readily; weight, 145 grams. Mesenteric glands very much hypertrophied and partially broken down. Death due to exhaustion and uræmic poisoning.

SCIRRHUS OF BLADDER.

T. McD.; aged 36 years; nativity, Massachusetts; admitted to U. S. Marine Hospital, port of Boston, Mass., December 6, 1892.

Had suffered from repeated attacks of diarrhea and much abdominal pain, also very irritable bladder, micturating about every half hour. No appetite. Rectal palpation revealed hard mass attached to bladder and diagnosis of scirrhus of bladder was made. Died March 28, 1893.

Autopsy (*eight hours after death*).—Body that of a medium-sized male very much emaciated. Right elbow joint had been resected, part of humerus being removed. Cicatrix from surgical wound. Motion good. *Rigor mortis* present. Pericardial sac contained normal amount of fluid. Heart contracted and empty. All valves competent. Ventricles empty. Walls thin; weight 180 grams. No fluid in pleural cavities. Slight pleuritic adhesions at apex of right lung. Hypostatic pneumonia in posterior portion of lower lobe of left lung. Slight hypostatic congestion and pneumonia of posterior portion of right lung. Weight of lungs: right, 295 grams; left, 415 grams. Slight peritoneal adhesions on left side. Liver congested; weight, 1,150 grams. Gall bladder and ducts normal. Spleen, weight, 120 grams. Pelvis of left kidney inflamed, dilated, and filled with pus. Right kidney congested. Weight of kidneys: left, 137 grams; right, 110 grams. Ureters inflamed and caliber enlarged. Left ureter dilated and filled with pus. Urethra congested. Prostate broken down. Bladder filled by broken down tumor and debris. Walls thick. Mesenteric glands enlarged. All glands in region of bladder enlarged, some broken down. On opening abdominal cavity a quantity of pus escaped from broken down lymph glands in skin over hypogastrium.

CANCER OF THE LIVER AND PANCREAS.

E. M.; aged 45 years; admitted to U. S. Marine Hospital, port of Boston, Mass., March 29, 1893, suffering from anæmia, swelling of extremities, particularly of left leg and foot; cachectic appearance, emaciated, considerable pain in abdomen, radiating downward and to left iliac region; a small tumor was found in abdomen which apparently gave lateral pulsation (but no bruit); a diagnosis of aneurism of abdominal aorta was entered provisionally. Died May 8, 1893, at 12:30 p. m.

Necropsy (*eighteen hours after death*).—Body of medium-sized male, emaciated, left leg greatly swollen; no cicatrices. *Rigor mortis.* Post mortem, discoloration on neck and shoulders. Pericardium contained normal quantity of fluid. Heart small, contracted; weight, 255 grams. Both lungs œdematous. Weight of right, 490 grams; left, 425 grams. Peritoneal cavity contained about 1,500 cc. of fluid. Peritoneum and peritoneal coat of intestines acutely and intensely inflamed. Stomach normal, except slight post mortem discoloration. Intestines, with exceptions noted, normal. Some dilatation of abdominal aorta. Liver contained a large cancerous growth, open at two points about 5 cm. apart; each open surface was about 3 cm. in diameter; liver tissue or substance contained 6 or 8 nodules of cancerous growths. Cancer had attacked adjacent surface of diaphragm; pancreas had a small nodule of cancerous tissue; subperitoneal and lumbar glands all cancerous; abdominal aorta at point of dilatation noted was overlapped with two enlarged glands which extended to either side, hence pulsating with artery. Arch of aorta was also dilated to about one-half again its normal caliber. Kidneys slightly congested. Weight of left 142 grams, right 112 grams. Capsule easily peeled. Left femoral vein was occluded for about 10 cm. with a thrombus, entirely closing the caliber; this was found to account for œdema and loss of pulsation of its accompanying artery, left femoral.

CARCINOMA OF THE LUMBAR VERTEBRÆ AND LIVER.

A. B.; aged 42 years; nativity, Germany; admitted to U. S. Marine Hospital at San Francisco, Cal., December 2, 1892. Readmitted January 4, 1893; died January 6, 1893.

History.—On admission he said he had sprained his back a month previously while carrying lumber. Had constant and great pain in lumbar and sacral regions, especially at sacro-iliac synchondrosis. Was treated at Port Townsend Marine Hospital. Pain was intermittent in character. Patient could not sleep without an opiate. He was emaciated, cachectic, and very much constipated. Physical examination showed phthisical process in right lung, with disease also beginning in left lung. History of syphilis: Morbid growth in pelvis suspected on account of pain and cachexia, but a physical examination failed to corroborate above suspicion. The patient steadily grew worse. Pain in back increased. Constipation could not be relieved by medicine or enemas. Digestion was poor and emaciation steadily progressed. The diagnosis made was sprain of back and tubercle of lung.

Necropsy (Six hours post mortem).—*Rigor mortis* still present. Subject much emaciated; pupils small, skin yellow and cachectic. Right leg œdematous. Lungs: Many pleuritic adhesions, especially on right side. On severing bronchi much pus escaped. Bronchial lymph glands were caseous and disintegrated. Several small cavities and scattered tubercles in right apex. Left lung slightly affected. Heart normal in size and valves competent. Abdomen. Liver, weight, 1,670 grams. A large cancerous nodule in upper edge of right lobe. A smaller nodule found in left lobe. Gall bladder distended. Stomach normal. Intestines: Small intestines apparently normal. Cæcum distended with gas. Rest of large intestines smaller than small intestines, and filled with hard masses of fœcal matter throughout its entire length. On removing small intestines a mass of hard tissue was seen on bodies of lumbar vertebræ and extending below promontory of sacrum. The growth had sprung from bodies of vertebræ, and had surrounded the aorta and vena cava, extending down into pelvis along vessels of right side more than left. The vessels appeared to tunnel the growth and were greatly compressed by it. The growth was removed as completely as possible, and weighed 260 grams. It was cartilaginous in consistence, very tough, and not very vascular. Kidneys: right, weight 180 grams; dark in color, but otherwise normal; left, weight 220 grams, very dark in color, otherwise appeared normal. Bladder nomal.

TUBERCULOSIS OF LUNGS.

CASE 1.

J. W.; colored; aged 21 years; nativity, Alabama; was admitted to the U. S. Marine Hospital, Cincinnati, Ohio, April 18, 1893; died May 23, 1893.

History.—This patient presented a continuous type of fever, with some diarrhea. There was some cough, but not enough at first to direct special attention to the chest. As the chest symptoms increased, with rapid emaciation and irregular temperature, the tubercular condition was recognized. There was continuous failure of vital forces, from the rapidly extending tuberculosis.

Necropsy (held on the 24th of May).—There were no ulcers of the intestines, so typhoid fever was excluded. Lungs were found to be in a very bad condition, showing cavities and quite a severe form of inflammation and extensive tubercular deposit. The pleural surfaces in places were united by adhesions. The liver, kidneys, and spleen, were somewhat below the normal in weight, and were rather hard.

CASE 2.

F. J.; aged 24 years; born in Sweden; admitted to Marine Hospital, Stapleton, Staten Island, N. Y., December 29, 1891; died September 22. 1892.

On admission patient stated that for several months he had had a cough, with yellowish expectoration, pain in the chest, dyspnœa, nausea, and vomiting. Physical examination revealed an emaciated body, fair chest expansion, with increased vocal fremitus, dullness, and crepitant rales at the apices of both lungs. Heart sounds were normal. Neither liver nor spleen enlarged. There was slight temporary improvement, after which he began to fail and the decline was steady till his death.

Necropsy (*twenty-three hours after death*).—Body extremely emaciated. On opening the chest the pleuræ were found adherent, and the left was much thickened, especially at the apex. The lungs were with difficulty removed. They were studded with tubercles and contained many large cavities, being more numerous in the left. A normal amount of pericardial fluid was present. The heart was reduced in size. The valves were normal. The left ventricle contained two antemortem clots, 1.5 cm. in diameter. The aorta was filled for 10 cm. with a like fibrinous material. Marked venous congestion of the liver with considerable enlargement. Kidneys were apparently normal. Spleen was enlarged to nearly twice its normal size. Mesenteric glands infiltrated with tubercles. Other organs not examined.

CASE 3.

Death from hemorrhage.

C. J.; aged 29 years; born in Florida; admitted to Marine Hospital, Stapleton Staten Island, N. Y., August 5, 1892; died October 22, 1892.

History.—Patient had coughed and raised yellow sputa for one month previous to admission to hospital. He also complained of pain in chest, dyspnœa, palpitation of heart, anorexia, nausea, and vomiting. Physical examination gave evidence of solidification of the right lung, and of the apex of the left. Disseminated tuberculosis of the right lung and involvement of the left apex were diagnosed. Symptoms above noted with rather profuse night sweats continued, till a severe hemorrhage occurred in which about 400 c. c. of blood poured from mouth and nostrils, causing almost immediate death.

Necropsy (*nine hours after death*).—Body fairly nourished. *Rigor mortis* slight. Pericardial sac filled with fluid. Heart pale, and reduced in size. Valves normal. The right pleural cavity nearly obliterated by adhesions. At the apex of the lung, in addition to the several smaller ones, was a cavity 4 cm. in diameter, the seat of hemorrhage. Both lobes were inflated with tubercles. On the external surface of the upper lobe were two openings 5 mm. in diameter. The upper lobe of the left lung contained a large tubercular mass. Spleen was pale and reduced in size. Liver, pancreas, and kidneys normal. Other organs not examined.

CASE 4.

T. B.; aged 52 years; nativity, Ireland; admitted to U. S. Marine Hospital, Chicago, Ill., May 17, 1893; died May 23, 1893.

History.—Patient had been sick about four years. Since the summer of 1892, a part of which he spent at this station, he has been unable to work, and has grown steadily worse. On admission to hospital his emaciation was extreme, expectoration very copious, and occasionally mixed with blood. No improvement followed treatment; on the contrary, rapid decline in strength took place, and he died on the sixth day after admission.

Necropsy.—The general nourishment of the body was poor and *rigor mortis* was well marked. Circulatory organs: The pericardium presented evidence of old pericarditis. The heart itself was of normal size and the valves competent. In the left ventricle, rather firmly attached to the chordæ tendinæ of the mitral valve, was an antemortem clot of moderate dimensions, but so situated as to materially affect the course of the arterial blood current. Lungs: These organs were firmly bound to the chest walls by pleuritic adhesions and were completely infiltrated with tubercular nodules, and cavities containing foul pus. The remaining viscera presented no abnormal macroscopic appearances.

Case 5.

Valvular disease of the heart.

J. S.; aged 40 years; nativity, England; admitted to U. S. Marine Hospital, Chicago, Ill., March 29, 1893; died May 5, 1893.

History.—This patient had been ill for some years before admission to hospital; he had cough attended with profuse expectoration, occasional attacks of hemoptysis, night sweats, and dyspnœa. Physical examination of the chest showed unmistakable evidence of tubercular involvement of both lungs and also a systolic murmur, heard with greatest intensity over the apex (mitral regurgitation). Patient being unable to take oil, was put upon malt extract and brandy. At intervals it was found necessary to exhibit elixir of the phosphate of iron, quinine, and strychnine, also tincture of the chloride of iron and digitalis. Several days after admission the patient had hemorrhage from the lung.

Necropsy.—The general nourishment was fair and there was the usual post-mortem lividity and *rigor mortis;* the pupils were normal. Circulatory organs: The pericardial sac contained an abnormal amount of fluid. The left ventricular wall was hypertrophied and the mitral valve vegetative and incompetent. Lungs: The left lung was collapsed and considerably compressed by fluid in the pleural cavity. The lung itself was tubercular. The right lung weighed 1,520 grams, was the seat of extensive disseminated tuberculosis, and there was a large cavity at the apex. The remaining viscera presented no abnormal appearance.

Case 6.

G. O.; born in Kentucky; admitted to U. S. Marine Hospital, Louisville, Ky., February 24, 1893, on diagnosis of intermittent malarial fever, and readmitted March 11, 1893, on diagnosis of tubercle of lung; died March 14, 1893.

Necropsy (fourteen hours after death).—*Rigor mortis* marked. Both lungs tubercular. Vomica in upper lobe of left. Other organs apparently normal.

Case 7.

J. E.; aged 41 years; born in Kentucky; admitted to U. S. Marine Hospital, Louisville, Ky., February 15, 1893; died May 21, 1893.

Necropsy (*eighteen hours after death*).—Large cavity in upper lobe of right lung. Lower lobe showed deposits of tubercular matter. Left lung also tubercular to some extent. Heart somewhat enlarged and fatty, but no valvular lesions. Other organs apparently healthy.

Case 8.

T. H.; aged 22 years; born in Kentucky; admitted to U. S. Marine Hospital, Louisville, Ky., February 22, 1893, on diagnosis of tuberculosis of the lungs; died March 12, 1893.

Necropsy (*twelve hours after death*).—*Rigor mortis* well marked. Œdema of lower extremities. Both lungs tubercular with large abscess cavity in lower lobe of left. Kidneys waxy. Other organs normal in appearance.

Case 9.

H. P.; aged 25 years; born in Virginia; admitted to U. S. Marine Hospital, Louisville, Ky., October 21, 1892, on diagnosis of secondary syphilis; died February 15, 1893.

Necropsy (*ten hours after death*).—Right pleura universally adherent. Right lung was a tuberculous mass. Left pleura nonadherent. Left lung tubercular in lower lobe; upper lobe fairly healthy. Heart normal. Valves competent. Mesentery studded with cheesy tubercles. Other organs natural in appearance.

CASE 10.

J. P.; aged 21 years; nativity, Sweden; admitted to the marine ward of the German Hospital, Philadelphia, Pa., May 16, 1892; died July 24, 1892.

History.—Patient much emaciated when admitted. Physical examination of the chest revealed consolidation of right lung with cheesy patches in the left. In fact, all the signs of rapid breaking down of the lung tissues were present. Hectic fever reaching at times 40° accompanied the disease. Treatment was directed toward checking the night sweats, the high fever, and the rapid wasting; also toward toning up the stomach and checking the harassing cough. For this purpose creosote, cod-liver oil, whisky, morphine, atropia, etc., were administered.

Necropsy.—Pleuræ thickened and the parietal and visceral layers adherent on both sides. Scars of old abscesses found upon the pleuræ. Cavities throughout the lung structure were found filled with a purulent fluid. Peribronchial tissue was indurated, and the mediastinal glands were much enlarged. The pericardium was filled with fluid. Upon the epicardium pale milk spots were discoverable. The heart was normal, except that the cavities were filled with fibrin clots, and a beginning granular degeneration was noted in the left ventricle.

CASE 11.

J. J.; aged 28 years; nativity, Norway; admitted to the marine ward of the German Hospital, Philadelphia, Pa., July 1, 1892, and died October 10, 1892. Patient gave family history of tuberculosis. He was very weak, and examination developed signs of tuberculosis. Cavities in both lungs and a subacute pleurisy were noted. The routine treatment for such cases was used. Whisky, cod-liver oil, malt, and porter were administered. Atropine, morphia, strychnia and cocaine lozenges, and camphoric acid were all used when there were indications.

Necropsy.—Thorax alone opened. Heart normal; in diastole, chicken fat clots in the left side. The middle mediastinum was found to be filled with fluid. Milk spots noted upon the epicardium were found in the cavities containing pus. Lungs and the lower lobes were slightly gangrenous. The left lung was solid up to the clavicle. Pleura over the left lung adherent. The under surface of the sternum was ulcerated in places.

CASE 12.

G. O.; aged 29 years; nativity, Norway; admitted to marine ward Cleveland City Hospital July 11, 1892; died October 1, 1892.

History.—Family history good, as stated. Had coughed for a year constantly. States considerable loss of flesh has taken place in that time. Night sweats for a month before admission. Consolidation found at left apex. Tubercle bacilli abundant in sputum. Rapid extension of signs in lungs, showing spread of condition to larger part of both lungs. Sputa became fetid. Evening temperature generally over 39° C.

Necropsy (twenty-seven hours after death).—Livores present. *Rigor mortis* marked. Great emaciation. Pericardial sac and heart normal. Two and a half liters of clear fluid in left pleural cavity, also several very firm adhesions. Left lung compressed; one large and many small cavities at apex, and tuberculous masses all through lung. Very general adhesions in right pleural cavity. A number of cavities at apex of right lung and fine tubercles throughout. No further examination made.

CASE 13.

R. M.; aged 32 years; nativity, Scotland; admitted to marine ward Cleveland City Hospital August 21, 1891; died September 19, 1892.

History.—Had had a cough for two years before admission. Sputa abundant, occasionally bloody. Consolidation at apex of left lung; cavernous respiration in same region. The disease progressed quite slowly. A tendency to diarrhea always present, and this symptom became constant during the last five months. During last fifteen days of life severe headache developed, followed by delirium and slight opisthotonus.

Necropsy (*twenty-four hours after death*).—Livores and *rigor mortis* present. Emaciated. Pupils alike and normal. Pericardial sac normal. Heart normal, small. Left pleural cavity obliterated by adhesions; right contained adhesions at apex and posteriorly. Left lung contained one large and many small cavities in upper lobe, and fine tubercles throughout. Tubercular nodules at apex of right lung and in several places near base. Peritoneum of normal appearance. Occasional small tuberculous nodules in intestine, especially at caput coli. Lower bowel black from pigmentation following the continued catarrhal inflammation. Liver of normal size; dark brown. Right kidney of normal size and appearance; left larger, cortex rather narrow. Spleen slightly enlarged. The skull posterior to coronal suture, on both sides of median line, but especially on the left, was thinned and translucent, and an apparent protrusion of the membranes corresponded to these depressions. Dura was attached to skull over vertex. Tuberculous nodules were observed on the surface of brain near median line at vertex, and also at base, and near the beginning of fissure of Sylvius on the right. Excess of fluid in ventricles.

CASE 14.

S. R. (negro); aged 35 years; nativity, Tennessee; was admitted to the U. S. Marine Hospital, Evansville, Ind., June 19, 1893, and died July 10, 1893.

History.—Two years previous to admission he had a very severe cough and profuse expectoration. On admission to hospital, was in a state of extreme weakness, emaciated, could hardly speak from shortness of breath, and had to be carried from the ambulance to bed. His night sweats were controlled, and for awhile he seemed to improve, gaining in strength; respirations became more regular and pulse stronger. There was an unfavorable change on the thirteenth day after admission, vomiting occurring, with incessant cough, very rapid breathing, and loss of appetite. On the 10th of July his breathing was very rapid, pulse imperceptible, and death occurred at 4:50 p. m.

Necropsy (*six hours after death*).—General nourishment very poor; *rigor mortis* imperceptible; pupils dilated; there was only one bedsore and that was on the back. Pleuritic adhesions were found. Pericardial sac had strong adhesions to pleural layer on left side. The sac contained twenty (20) c. c. of fluid. Heart muscle was in an anæmic condition and the ventricles were in a state of collapse. Right lung: There were seven large tuberculous abscesses of lung, four in superior lobe; these had discharged pus, while the three others were beginning to break down. Left lung: Five large abscesses were found in the superior, two in middle, and one in lower lobe; three in superior lobe were empty; all the rest contained pus. Liver: Enlarged, dark in color, right lobe soft; gall-bladder and ducts were filled with bile. Stomach: Undigested milk and eggs were found in stomach, which was distended with gas. Kidneys: Very anæmic and of a yellowish tinge; they were abnormally large, but were apparently not diseased.

CASE 15.

G. W. J.; aged 29 years; nativity, Virginia; admitted to the U. S. Marine Hospital Baltimore, Md., March 13, 1893; died March 20, 1893.

History.—Gave family history of consumption. Patient had been sick some time before admission. On admission was very weak and exhausted; complained of pains in the chest, of a sharp, shooting character; respiration very much accelerated, forty-four per minute; dyspnœa marked on slightest exertion. Anxious countenance and delirium; coughing frequent, accompanied by a muco-purulent expectoration. No blood noticed in expectorated matter. Was unable to take any nourishment except liquids. Temperature, 38.4; pulse, 114. Auscultation: Respiratory murmur heard in all parts of both lungs, but very short and interrupted; gurgling râles heard all over the chest, especially marked at the apex of the right lung; friction sound heard on both sides of chest; heart sounds increased and rapid; percussion note dull over both lungs, more marked over apex of right lung. Heart, liver, and spleen, normal.

Necropsy (*twelve hours after death*).—*Rigor mortis* well marked. Body very much emaciated. Ribs and costal cartilages prominent. Pleural cavity contained very small quantity of fluid. Parietal and visceral pleura adherent at places on both sides of thorax, more marked on right side. Lungs: Crepitant in all parts on pressure, small nodules in apices. On section there was a muco-purulent exudation. The apex of the right lung contained several small cavities partly filled with pus; cavities surrounded by solid lung tissue. Pericardium adherent to chest wall in places. Heart: Walls of right side of heart slightly thickened; valves normal. Liver: Somewhat enlarged; on section presented a deep-red appearance, showing some congestion. Spleen, normal in color and size. Kidneys: Right kidney larger than left; capsule slightly adherent in patches. Both kidneys normal on section.

CASE 16.

F. H. K.; aged 40 years; nativity, New York; admitted to Marine Hospital, Stapleton, N. Y., May 31, 1892; died July 14, 1892.

History.—Family history good. Stated he had been sick about eighteen months, first with a cold, which was followed by a cough. When admitted he had cough, and freely expectorated thick yellow sputum. No night sweats. Bowels regular, anorexia, but no nausea nor vomiting. Dyspnœa, palpitation of heart, and insomnia. Physical examination: Body much emaciated, epigastric region prominent, chest expansion fair. Vocal fremitus increased on right side. Dullness on right side. Amphoric resonance on percussion at base of either lung; bronchial breathing marked on left side, and mucus râles heard over left lung. Heart rapid, but no abnormal sounds on auscultation. Liver somewhat enlarged. Spleen normal. He gradually became weaker and died on the date above given.

Necropsy (*four hours after death*).—*Rigor mortis* not marked; body fairly well nourished; hypostatic congestion posteriorly. Pleural cavity of the right side filled with fluid; right lung almost completely collapsed, with strong fibrinous adhesions; lung contained tubercular cavities throughout. The left lung also showed strong adhesions with tubercular deposits and cavities in apex. Heart apparently normal; pericardial fluid normal in amount. Fluid was also found in the peritoneal cavity. The liver was mottled on external appearance, and on section presented marked nutmeg appearance. Spleen normal. Kidneys somewhat pale.

CASE 17.

L. L.; aged 37 years; nativity, Sweden; admitted to Marine Hospital, Stapleton, Staten Island, N. Y., August 12, 1892; died August 23, 1892.

History.—Upon admission to hospital, patient stated he had been sick about three weeks. Complained of severe headache and pain in back and right side. No chills, but fever and sweating at night. Had a cough with yellowish expectoration; had "spit up blood." Has dyspnœa, no palpitation of heart. Bowels regular, passed his urine without difficulty.

Physical examination.—Body fairly well nourished; depression above clavicles; chest expansion good; vocal fremitus normal; dullness on percussion at apices of both lungs; crepitant and subcrepitant râles heard anteriorly, and bronchial breathing posteriorly over lungs; vocal resonance increased on left side. Heart sounds normal. Tongue coated white. Liver slightly enlarged. Spleen normal in size.

21st.—Became unconscious;—probably cerebral embolism, though the usual symptoms were not very marked. Temperature at 3:45 p.m. rose to 40.2 and at 4:15 p.m. fell to 37.6. Condition became gradually worse, death taking place at 6 p.m., August 23, 1892.

Necropsy (*eighteen hours after death*).—Body fairly well nourished. *Rigor mortis* well marked. Hypostatic congestion posteriorly. On removing the calvarium, the membranes of the brain were found to be deeply congested; otherwise the brain was apparently normal. Both lungs firmly adherent to chest wall and studded with miliary tubercle. Pericardial sac contained the normal amount of fluid. Heart apparently normal. Liver somewhat enlarged, and on section presented a nutmeg appearance. Spleen pale. Both kidneys deeply congested.

CASE 18.

J. M.; aged 30 years; nativity, Ireland; was admitted to the U. S. Marine Hospital, New Orleans, La., May 27; died June 24, 1893.

History.—The patient had been previously under treatment at this and other marine hospitals for pulmonary phthisis, fistula in ano, and alcoholism. On admission he was completely "run down," emaciated, weak, harassing cough, profuse expectoration, with exhausting sweats and diarrhea. Auscultation showed both lungs to be extensively diseased. Tonics, stimulants, sedatives, and an abundance of nutriment were given, the only result being to make him comfortable.

Necropsy (*twelve hours after death*).—Body that of a young white man in extreme emaciation. The lungs were broken down, honeycombed with abscesses and so firmly adherent to chest walls as to be detached with difficulty, tearing readily. Estimated weight of each, 300 grams. The other organs, though anæmic, were apparently normal.

CASE 19.

W. T.; seaman; aged 40 years; a native of Maryland; entered the marine ward of St. Francis Xavier's Infirmary, Charleston, S. C., on May 30, 1892; died July 23, 1892, from tuberculosis of the lungs.

No history of tubercular diseases in family. His life as a pilot had been a very exposed one, and asthmatic symptons had been present for more than two years. Status presens. Appearance generally good; some dyspnœa evident, with blueness of lips; skin muddy; clubbing of ends of fingers; thorax well developed, expansion limited; general dullness over the apices of lungs; increased resonance of lower right lung. Auscultation revealed a diminished respiratory murmur throughout left lung; numbers of small râles; very general sibilus, and a few loud râles in larger tubes. Expiration was prolonged and inefficient. On the right side there was less spasm of the tubes and but little sibilus; at the apex were heard numerous small râles, and expiration was prolonged; the lower lobes were still elastic, with no evidence of infiltration; expiration normal. Heart sounds distinct, with accentuated pulmonary second sound. Cough is troublesome; expectoration nummular and muco-purulent. Cover-slip preparations, with carbol-fuchsin in contrast with methyl-blue, gave the differentiation of numerous tubercle-bacilli. Treatment was tonic and expectorant, with free use of creosote. The lungs were rapidly disintegrated; expectoration copious, the bacilli increasing to enormous numbers; emaciation extreme; general œdema; death from exhaustion.

Necropsy (*six hours post mortem*).—Body of adult male, 175 cm. high, 110 cm. around shoulders; slight lividity about back and loins; extreme emaciation; rigor slight. Pupils normal; heart normal save slight dilatation of the right auriculo-ventricular opening, with slight relative tricuspid insufficiency. Pericardium and fluid normal; heart in diastole. Left pleura adherent throughout and studded with tubercles; apex of lung badly disintegrated with numerous small cavities filled with pus; tubercles everywhere; lower lobe infiltrated with pus from broken down tubercular masses. At the diaphragm the pleura was densely infiltrated with tubercles; and the lymphatics of the diaphragm, becoming tubercular, had borne the infection to the general peritoneum which was studded with gray tubercles; post-peritoneal glands much enlarged. Other organs much congested. Death from tuberculosis of the lungs.

Case 20.

J. H., aged 28 years; nativity, Ireland; admitted to Marine Hospital, Stapleton, Staten Island, N. Y., December 5, 1892; died January 19, 1893.

History.—Patient had been ill for about five months, complaining of cough with considerable yellowish expectoration, and dyspnœa. Appetite very good. Temperature 40° C. Pulse 100. Respiration 40. Body fairly nourished. Chest expansion was good. Sonorous and sibilant rales were heard throughout both lungs. Patient was evidently suffering from a severe attack of bronchitis. A few days later, as the acute symptoms in a measure subsided, there was evidence of consolidation in the lower lobe of left lung posteriorly, dullness on percussion, and tubular breathing.

December 14.—It was noted that at both apices there were increased vocal fremitus, dullness on percussion, and subcrepitant rales. The temperature ranged very high, between 38° and 40° C., and during the forty-five days patient was in hospital his temperature was normal only fourteen mornings. His decline was very rapid. For several days before his death there were attacks of dyspnœa and cyanosis, from each of which he rallied, till on the evening of January 19, in an attack like the above, he suddenly expired.

Necropsy (*thirteen hours after death*).—Body somewhat emaciated. *Rigor mortis* slight. On opening the thorax the lungs did not collapse. There were 30 c. c. of pericardial fluid, and on the anterior wall of left ventricle was a fleck of fibrin one c. m. square. Large ante mortem clot in right ventricle. The valves of the heart were normal. The visceral and parietal layers of left pleura, where nonadherent, were inflamed and thickened. There were 250 c. c. of straw-colored fluid in the cavity. Pus exuded from both bronchi as they were cut. Apex of left lung was firmly adherent to chest wall. Upper lobe contained a cavity the size of a hen's egg, across which stretched several fibrous bands. Throughout the lung were smaller cavities, all of which were filled with pus. Right lung was adherent at apex. Upper and middle lobes were infiltrated with small pus cavities. The right lower lobe, the only one apparently capable of performing the respiratory function, was deeply congested. Liver somewhat enlarged and congested. Spleen increased to twice its normal size, nodular, and congested. Left kidney was the smaller. Both were congested. The mesentery was studded with small tubercular nodules and the peritoneum contained 1,500 c. c. of fluid. The bladder was small and contracted.

Case 21.

P. C.; aged 63 years; nativity, Ireland; was admitted to Marine Hospital, Stapleton, Staten Island, June 17, 1892; died, January 8, 1893.

History.—Patient had been in this hospital twice previous to his last admission under the diagnosis of acute bronchitis. When last admitted he complained of cough, dyspnœa, and a feeling of general malaise. Body poorly nourished. Chest expansion about one and one-half inches. Dullness on percussion over upper half of left lung. Mucous rales heard at the apices of both lungs. Systolic murmur at the apex of heart. Patient's appetite was poor. The bowels were irregular. The cough grew worse and expectoration at times containing blood became more profuse and purulent. Dyspnœa increased and near the end respiration was very rapid and labored.

Necropsy (*thirty-six hours after death*).—Body emaciated. *Rigor mortis* marked. Pericardial fluid normal. Large ante mortem clot in aorta. Segments of aortic valve were thickened. Otherwise heart was apparently normal. Both lungs were firmly bound down by pluritic adhesions. Right was congested throughout. Left lung was greyish in color, tough and fibrous under the knife, and it contained several purulent cavities. Liver normal in size, but slightly cerrhotic. Spleen small and tough; capsule nonadherent. Kidneys apparently normal. Mesenteric glands were infiltrated with tubercle.

CASE 22.

H. J.; aged, 51 years; nativity, Finland; admitted to Marine Hospital, Stapleton, Staten Island, N. Y., March 25, 1893; died May 27, 1893.

History.—Patient states that he has had a cough for the past four months. Night sweats every night; has rapidly lost flesh; 12 or 14 pounds in the past four months. His family history gives no clue to tuberculosis; has never spit up any blood; spits up a yellow viscid mucous fluid. Used to smoke a pipe, from which he inhaled the smoke. Bowels regular; appetite poor. Drinks some. No specific history. General condition poor.

Physical examination.—Body poorly nourished. Chest expansion poor. Slight increase of dullness and vocal fremitus at both apices. Large and small rales in both subclavicular regions on auscultation. Emulsion cod-liver oil given three times a day. Also creosote cough mixture and chloroform cough mixture. Treatment continued up to April 24. Weight April 29, 123½ pounds.

May 3.—Creosote mixture discontinued. Whisky administered at a. m.; p. m., morphia administered.

May 5, p. m.—Dyspnœa and pain in chest. Morphia again administered.

May 6, p. m.—Feels sore all over body. Dyspnœa and pain in chest and abdomen; constipated; C. C. pills No. iii at 8:30 p. m. administered.

May 9.—Whisky and maltine with hypophosphites administered.

May 10, p. m.—Pain over chest and abdomen and sides. Morphia given again.

May 13.—Pain still. More morphia.

May 14 and 15.—Constipated. Seidlitz powder on 14th and C. C. rhubarb pills on 15th.

May 17.—Whisky increased to 75 c. c. 17th p. m., very restless, and pain in abdomen. Morphia administered. 17th to time of death patient grew weaker and was kept on morphia and stimulants. Patient died 1:15 p. m., May 27, 1893, from asthenia.

Necropsy (*Sunday, May 28, at 10 a. m.*).—Body poorly nourished. P. m. lividity marked. *Rigor mortis* marked. Both pleural cavities obliterated by adhesions. Left lung: Upper lobe infiltrated with tubercle nodules; lower lobe, hypostatic congestion. Right lung: Same condition. Liver: Genuine nutmeg. Spleen congested. Kidneys slightly decreased and congested.

CASE 23.

H. McG.; aged 30 years; nativity, New York; admitted to the Marine Hospital, Stapleton, Staten Island, N. Y., April 11, 1892; died July 6, 1892.

History.—Upon his admission patient stated he was taken sick four months ago. His sickness commenced with chilly sensations, colliquative sweats, cough with a profuse white expectoration; no dyspnœa or pain in chest; appetite good, nausea and vomiting present; bowels constipated; progressive emaciation; pain in back.

Physical examination.—Body poorly nourished; chest expansion poor. Vocal fremitus not increased. On percussion slight dullness over both lungs. On auscultation tubular breathing at apices and mucous rales throughout both lungs. Heart sounds normal; liver slightly enlarged; spleen appears normal in size. Patient remained in hospital under treatment, gradually growing weaker, and died on date above given.

Necropsy (*nineteen hours after death*).—Body emaciated; *rigor mortis* well marked hypostatic congestion posteriorly; pericardium contained normal amount of fluid. Heart large; otherwise normal. Lungs; tubercular and filled with cavities; both firmly adherent to chest walls. Liver fatty, kidneys pale, spleen normal.

CASE 24.

J. W. F.; aged 50 years; nativity, New York; admitted to the marine ward of St. Mary's Infirmary, Galveston, Tex., December 19, 1892; died April 19, 1893.

History.—Patient was first affected four years ago, and has not been well since. He was an out-patient of the New York Hospital, and was advised to come South. When seen here he had several troubles in addition to his pulmonary complaint, namely, necrosis of the alveolar processes of the inferior maxilla, dyspepsia, and asthma; these latter, however, soon disappeared. The following symptoms and signs predominated: Cough and purulent expectoration, attacks of shortness of breath, retraction of the left chest wall, loss of flesh, evidences of consolidation, evening rise of temperature, a slight hemorrhage from lungs before death. A large bronchiectatic cavity was located in right apex.

Necropsy.—Post-mortem examination made six hours after death. Beginning *rigor mortis.* Body extremely emaciated. Pericardial sac contained a small amount of amber-colored fluid. Heart small, with its walls and valves normal. Left lung much shrunken and adherent by old adhesions to thoracic parietes and diaphragm. The apex clung tenaciously, leaving a part behind; no sound tissue in entire lung. Section showed numerous small cavities, caseous patches, and deposits of tubercle. Right lung not so badly involved, only the apex and part of middle lobe being diseased. The apex was one large cavity. There was a marked difference in the sizes of the pleural cavities, the left being unusually small and encroached upon from all sides. The source of the hemorrhage, whether systemic or pulmonary, could not be ascertained. The intestines and accessary organs displayed no departure from the normal appearances found there.

CASE 25.

C. P.; age, 30 years; nativity, Finland; admitted to U. S. Marine Hospital, port of Boston, Mass., May 17, 1893, suffering from tuberculosis and inflammation of the stomach; complained particularly of constant pain in stomach; died May 22, 1893.

Necropsy (twelve hours after death).—Body of medium-sized white male; tattoo marks left forearm figure of a female. Heart: Small, contracted, its valves pale and flabby, but competent. Weight of heart, 277 grams. Pleura adherent throughout. Both lungs infiltrated with tubercle; several cavities of small size in posterior portion of left lung; longest of these, about 3 cm. in diameter, was in upper posterior part of left upper lobe. Weight of lungs: Left, 877 grams; right, 870 grams. Small intestine contained throughout its course numerous tubercular ulcers, some extending nearly entirely around its lining; many of these were so extensive and walls of gut so thinned that rupture was imminent. Larynx and trachea also contained tubercular ulcers. Blood vessels of stomach very much dilated; the mucous membrane of this organ was in a state of chronic congestion and catarrhal inflammation. Liver substance flabby and slightly amyloid. Weight of liver, 1,752 grams. Kidneys apparently normal. Weight of left, 147 grams; right, 145 grams. Brain: Membranes of brain pale and anæmic. Brain normal; weight, 1,315 grams.

CASE 26.

E. S.; aged 26 years; nativity, Nova Scotia; admitted to U. S. Marine Hospital, port of Boston, Mass., March 13, 1893, suffering with tuberculosis of the lungs; died March 29, 1893.

Necropsy (twelve hours after death).—Body small, emaciated. *Rigor mortis.* Post-mortem, lividity on neck, shoulder, and back. Heart weighed 250 grams; its valves pale and flabby, but competent. Pericardial sac contained 75 c. c. fluid. Pleural cavity contained 259 c. c. fluid. Pleura adherent throughout. Left lung infiltrated with tubercle, except inferior half lower lobe; weight, 1,150 grams. Right lung, weight 1,090 grams. Contained tubercle in upper lobe; balance œdematous.

Patches of tubercle in visceral layer of peritoneum. Liver congested, nutmeg in appearance; weight, 1,750 grams. Pancreas weighed 70 grams. Left kidney weighed 297 grams; large and white; capsule easily peeled; right kidney, weight 167 grams. Same appearance as left. Spleen congested; weight, 230 grams.

CASE 27.

C. B.; aged 50 years; nativity, Sweden; admitted to U. S. Marine Hospital at San Francisco, Cal., April 9, 1892; died, June 28, 1893, at 6 o'clock a. m.

History.—On admission patient complained of pain in joints of lower extremities and sore throat. He stated that three months previous to admission he had had an ulcer of the penis. Subsequently a rash appeared on body. A diagnosis of secondary syphilis was made and he was put on specific treatment. On May 9, 1892, he complained of cough. Physical examination showed tubercle of both apices. A prominent symptom throughout patient's illness was a severe pain over lower border of liver, which was aggravated by pressure. Chronic constipation was present from date of admission until May 17, 1893, when a severe diarrhea set in, which continued, with few intermissions, until patient's demise. Patient became much emaciated.

Necropsy (*seven hours post-mortem*).—Body much emaciated. *Rigor mortis* marked. Thorax: Numerous old pleuretic adhesions were encountered on both sides. Lungs: Both lungs were contracted. Very little crepitation present. To the touch they were hard and nodulated in the interior. On section they cut with a leathery feel. Tubercular cavities and caseous spots in both apices. Both lungs were congested. Heart weighed 240 grams. Antemortem clot in aorta. Mitral valve was found incompetent; other valves were competent. Liver weighed 1,400 grams. Gallbladder was distended. Right lobe appeared normal; left lobe was somewhat contracted and was hard and leathery on section. There seemed to be some fibroid induration. Spleen was congested. Kidneys were large and white. Capsule nonadherent. They presented signs of chronic parenchymatous nephritis.

CASE 28.

W. K.; aged, 50 years; nativity, New York; admitted to U. S. Marine Hospital at San Francisco, Cal., March 20, 1893; died May 1, 1893, at 11:45 p. m.

History.—On admission he complained of cough and constant vomiting. His cough was of several years' duration. He gave a phthisical family history, and physical examination revealed tubercle of lung in stage of cavity formation. An atheromatous condition of his arteries was present. Treatment was palliative, and the disease gradually progressed until death supervened.

Necropsy (*twelve hours post-mortem*).—General condition, much emaciated. Thorax: Old pleuretic adhesions were encountered on both sides. Bronchial lymph glands were caseous. Right lung: Congested posteriorly and inferiorly; several small cavaties, filled with pus, in upper lobe. Apex appeared healthy. Left lung: Apex much diseased. Numerous small cavities filled with pus; also numerous tubercular foci found in apex. Heart normal. Abdomen: Liver small; weight, 1,150 grams. It was hard and leathery on section. Kidneys: Left kidney, weight 120 grams; right kidney, weight 110 grams; appeared normal. Intestine: Miliary tubercles in peritoneal coat. Numerous ulcers in jejumem and ileum. One was a perforating ulcer. The peritoneum had lost its natural lustrous appearance and appeared dull in color. Scattered exudations of lymph present. Mesenteric lymph glands much enlarged.

TUBERCULOSIS OF THE LUNG.

CASE 29.

A. S.; aged 23 years; nativity, Illinois; admitted to the U. S. Marine Hospital, New Orleans, La., July 15, 1892. Discharged at his own request August 12, 1892. Readmitted October 2, and died October 11, 1892.

History.—Patient sought relief from a tormenting diarrhea, obstinately insisting that he was perfectly well otherwise. Examination disclosed a chronic pneumonia of right lung, extensive consolidation, and probable obliteration of corresponding pleural cavity. After a few weeks' treatment he requested his discharge, being improved in strength and general condition. After a somewhat extended trial of domestic and empirical remedies he returned to the hospital completely broken down. Temperature 39° C., pulse 140, thread-like respiration 30. Superficial general anasarca from umbilicus down. Diuretics, stimulants, and an abundance of milk, eggs, beef tea, and other diet, with sufficient opium to quiet the cough, constituted the treatment. The patient sank into a condition of stupor and died.

Necropsy (*four hours after death*).—Body that of a young mulatto, extremely emaciated, abdomen and feet greatly swollen. Post-mortem lividity and rigor marked. Heart sac distended with serum; heart pale, flabby, and loaded with fat; valves apparently normal; weight, 327 grams. Left lung congested, weight, 335 grams, right lung hepatized throughout, breaking down, adherent to chest walls; weight, 625 grams. Both lungs studded with cheesy tubercles. Large quantity of serum in thoracic and abdominal cavities. Intestines dotted throughout with tuberculous ulcers. Liver very dark brown, otherwise apparently normal; weight 1,472 grams. Gall bladder nearly empty, and with the ducts very pale in color. Kidneys showing fatty degeneration; weight, left, 165 grams; right, 157 grams. Spleen large, friable, currant-jelly like; weight, 582 grams. Glands of mesentery enlarged, hardened, and many breaking down.

CASE 30.

E. A.; aged 45 years; nativity, Ohio; admitted to marine ward Cleveland City Hospital, September 17, 1892; died January 21, 1893.

History.—Family history good. Caught cold in May, 1892, and has had cough since. No dullness detected at first on percussion of chest, but a few fine mucous râles in right interscapular region and bronchophony were found. He had night sweats.

October 1.—Bronchial respiration, subcrepitant râles at both apices. Tubercle bacilli in sputum. Progress of disease quite rapid. Occasional chills and night sweats. Loss of voice after January 1, 1893.

Necropsy (*sixteen hours after death*).—*Rigor mortis* present. Emaciated. Pericardial sac distended with clear fluid; one small adhesion. Heart and thoracic aorta normal. Larynx and trachea covered with minute ulcers. In right pleural cavity adhesions were found posteriorly; in left at apex and posteriorly. Left lung contained many tubercular masses, one large cavity at apex and many small ones in both lobes. Right lung contained many tubercular nodules and many small cavities. There was considerable fluid in abdominal cavity. Intestines normal. Liver normal, weight 2 kilos. Right kidney appeared normal; the left was smaller and nodular, contained two cysts filled with thin fluid and two filled with dark brown granular, glistening material. Cholesterin crystals were found to be the only distinguishable constituent of the latter. Spleen normal.

CASE 31.

C. F.; aged 39 years; native of Pennsylvania; admitted to U. S. Marine Hospital, Cincinnati, Ohio, September 15, 1891; died November 9, 1992.

History.—Typical of tuberculosis of lungs up to October 31, 1892, when a condition of symptoms denoting cerebral meningitis supervened. For two weeks there had been frontal headache, from which only partial relief could be had from counter-irritation and analgesics. Early in morning of above date patient became delirious, with constant groaning and limbs in continual motion. Six a. m. pulse 120; Cheyne-Stokes respiration, pupils dilated, and eyes unresponsive to light. Patient rallied in evening, and breathing became normal. Three days later much better, but semiconscious. When spoken to seemed to understand, but replies rambling and incoherent. A comatose state set in at the last and relieved him of much suffering.

Necropsy (*four hours after death*).—Body greatly emaciated. Removal of the calvarium exposed a congested dura; vessels large and tortuous. A pachymeningitis existed above the middle lobes and in neighborhood of fissure of Rolando, with adhesions to cranial bones and to the pia. No miliary tubercles found in basilar pia or anywhere else. The cerebral substance was soft in consistence; ventricles well filled with fluid. The brain weighed about 1,380 grams. The lungs exhibited the usual lesions consequent on long-standing tuberculosis. The result of examination of the brain is interesting, as a diagnosis of tubercular meningitis seemed to be borne out by all the facts in the case.

CASE 32.

J. C.; aged 17 years; nativity, Kentucky; admitted to U. S. Marine Hospital, Cincinnati, Ohio, January 26, 1892; died July 8, 1892.

History.—On admission patient was suffering from an ischio-rectal abscess, which yielded readily to treatment. His was a typical case of pulmonary tuberculosis.

Necropsy (*nine hours after death*).—Body exceedingly emaciated; beginning *rigor mortis*. Heart in dyastole and containing post mortem clots; there were some vegetations around the mitral orifice, but no impairment of function. Both lungs were adherent in many places to the chest walls; the several lobes were agglutinated and loaded with tubercles. There were numerous abscesses, some containing as much as 5 c.c. of pus; the bronchial glands were enlarged and degenerating. The liver was pale in color and undergoing fatty degeneration. The great omentum thinned and devoid of adipose tissue.

CASE 33.

E. W. W.; aged 26 years; a native of Wisconsin; was admitted to the Marine Hospital, St. Louis, Mo., on October 8, 1892; died October 13, 1892.

His family history is good. He had smallpox when 5 years old. Seven years ago his right leg was broken. Four years ago had malarial fever, and again three months later. One year ago had a gunshot wound in his leg. In May, 1892, he got wet and took cold. He now has a cough, which annoys him a great deal in the morning. He has urgent dyspnœa on the slightest exertion, and his respirations, even when he is sitting quiet, are very frequent. He has night sweats. He has no appetite, and feels very weak. He had a rise of temperature of one degree when first admitted. Then his temperature remained normal until he died, on the 13th of October, 1892.

Necropsy (*eight hours post-mortem*).—*Rigor mortis* slightly marked. Lungs: Left lung contained a large number of small cavities, the same is also true of left lower lobe; left lung weighs 1,210 grams; the right upper lobe is one large cavity. Right middle and lower lobes contain many small cavities. Weight of right lung, 1,310 grams.

CASE 34.

P. O.; aged 20 years; nativity, Norway; admitted to U. S. Marine Hospital, Boston, Mass., September 26, 1892; died October 2, 1892.

Has had a cough for four years; night sweats for past two years. A few days ago he fell overboard, and since that time his cough has been much worse. Very feeble on admission: breath very short; pain and soreness over chest.

Necropsy (*thirty-four hours after death*).—Post-mortem lividity slight. *Rigor mortis* marked. General nourishment fair. Pupils moderately contracted. Ventricles and valves of heart normal; both ventricles contained chicken-fat clot; weight of heart, 280 grams. Pericardial sac normal; contained about 30 c.c. straw-colored fluid. Firm pleuritic adhesions from apex to base of left lung on posterior surface; multiple cheesy nodes, with one cavity size of walnut at apex of left lung; weight of lung, 730 grams. Entire surface of right lung bound by old and firm pleuritic adhesions. Multiple cheesy nodes throughout entire lung. Apex almost solid, with cavity about the size of a hen's egg; weight of lung, 760 grams. Liver normal in size and color; weight 1,580 grams. Kidneys normal; capsule not adherent; weight, left, 182 grams; right, 135 grams. Suprarenal bodies normal. Spleen normal; weight, 183 grams.

CASE 35.

J. B.; aged 51 years; nativity, Maine; admitted to the U. S. Marine Hospital, port of Boston, Mass., May 19, 1892; died July 23, 1892.

Has had a severe cough since early last winter and was treated in this hospital until early in April. Caught cold six weeks ago, since which he has been quite ill. Family history good. He was always well before this attack, which began with influenza and pneumonia. Symptoms on admission: Cough, mostly at night; expectoration frothy and profuse; dyspnœa constant, worse on exertion. Had only very few night sweats. Lost 35 pounds in weight. Physical signs:

Inspection: Chest flattened below clavicles. Expansion three-fourths of an inch. Percussion: Anterior, right, dullness over clavicle to third intercostal space. Liver: Dullness begins at fourth interspace, ends at tenth. Left: Slight dullness over clavicle. Posterior: Nothing of note.

Auscultation: Right, bronchial breathing over apex, feeble at base, though bronchial sounds predominate. Left: Bronchial breathing at apex, decreasing toward base. Skin yellowish; sputum contained tubercle bacilli in large numbers.

Necropsy (*five hours after death*).—Post-mortem lividity present; *rigor mortis* present; general nourishment poor. All valves of heart competent, but slight thickening at edge of nitral. Ventricular cavities normal; wall of left ventricle hypertrophied; wall of right ventricle normal. Antemortem blood clot in right ventricle. Weight of heart, 365 grams. Pericardial sac contained about 30 c. c. of fluid. Pleuræ so firmly adherent to lungs over whole surface that they could not be removed entire. Lungs contained caseous nodules and spots of fibroid degeneration. Fatty infiltration of liver; color grayish; weight 1,820 grams. Fatty degeneration of kidneys. Weight, left, 200 grams; right, 165 grams. Spleen congested. Weight, 290 grams.

CASE 36.

J. W.; aged 50 years; admitted to the U. S. Marine Hospital, Boston, Mass., May 3, 1892; died October 20, 1892.

Patient very weak and feeble from time of admission; was much in bed; profuse bronchorrhœa and occasional night sweats. Cough very severe and troubled him most during the night. Had much trouble with diarrhea a short time before death. Had been a very hard drinker and did not respond to stimulating treatment.

Necropsy (*forty-eight hours after death*).—Post-mortem lividity slight; *rigor mortis* marked. General nourishment fair; pupils contracted. Ventricles of heart filled with chicken-fat clots. Walls flabby and slightly fatty; all valves competent. Pericardial covering of heart shows cicatricial thickening, evidently the result of old pericarditis. Weight of heart, 440 grams. Pericardial sac normal, containing about 90 c. c. fluid. Left lung bound down by pleuritic adhesions for its entire length posteriorly and at the base anteriorly; scattered tubercular nodes through the entire lung, particularly at the base, which was solid, with a few small cavities; apex also solid. Bronchial tubes filled with a muco-purulent secretion. Weight, 840 grams. Right lung bound by firm pleuritic adhesions over entire surface; at the base the adhesions were so firm that they had to be dissected; consolidation and small cavities throughout entire lung, except small portion of upper lobe; weight, 840 grams. Liver, fatty; distinctly nutmeg; grayish in color; weight, 1,890 grams. Left kidney, pig-backed kidney of Formad; fatty; capsule adherent. Weight, 190 grams. Right kidney, fatty; weight, 185 grams.

TUBERCULOSIS OF THE LUNGS AND INTESTINES.

K. P.; aged 22 years; nativity, Norway; admitted to U. S. Marine Hospital, Vineyard Haven, Mass., January 19, 1893; died May 25, 1893.

History.—When patient was admitted he complained of severe pain in the abdomen, with tenderness on pressure; bowels constipated, and had fever. A diagnosis of peritonitis was made. In a short time there was a severe diarrhea; tenderness on pressure in the right iliac fossa, and paroxysms of severe pain. Soon there was loss of flesh, the patient becoming extremely emaciated before his death. The fever was of an irregular type, and was characterized by the most marked variations, the evening temperature being 39° C. to 40° C., while the morning temperature was seldom above 36° C., and often as low as 34° C. At this time no signs of tubercle of lungs could be recognised, but the diagnosis was changed to that of tubercle of intestines. About three weeks before his death he suffered with cough, and all the physical signs of phthisis pulmonalis could be recognized. All these symptoms increased in severity until the patient died from exhaustion.

Necropsy (one hour after death).—External appearances: *Rigor mortis*, slight; postmortem, lividity slight and body much emaciated. Thoracic cavity: The pleuræ were studded with tubercles, and marked adhesions existed, almost obliterating the pleural cavities. Both lungs were found much diseased; the whole structure of the left was tuberculous and contained three small cavities in the upper lobe. Right lung was similar in condition to the left, excepting the cavities. The heart was small; weight, 250 grams. A few tubercles were found in the pericardium, and the pericardial sac contained 50 c. c. of pale straw-colored fluid. Abdominal cavity: Stomach, normal. Peyer's patches were markedly infiltrated with tubercles and had ulcerated, showing the characteristic tubercular ulcer, some of which had extended to the peritoneal coat. Peritoneum showed evidences of inflammation, which was tubercular in origin. Kidneys, spleen, and pancreas normal. Cranium: Brain not examined.

TUBERCULOSIS OF THE LUNGS, LARYNX, AND INTESTINES.

O. E.; age, 30 years; nativity, Sweden; admitted to the U. S. Marine Hospital, Chicago, Ill., December 8, 1892; died December 17, 1892.

History.—On admission to hospital patient was suffering with marked symptoms of general tuberculosis. The most prominent symptoms were cough, diarrhea, and extreme prostration. His throat was very painful, and his food, upon being swallowed, regurgitated through the nose. Suffered great abdominal pain. This patient had been in the hospital during the previous summer with diarrhea and abdominal pain, together with symptoms of tubercle of lung, and after a short stay he had been discharged much improved.

Necropsy.—General nourishment very poor. Left lung weighed 1,150 grams and was filled with tubercles. Many cavities were found. Extensive pleuritic adhesions existed. Right lung weighed 950 grams; universally infiltrated with tubercle. Peritoneum and small intestines tubercular. Liver dark; weighed 1,900 grams.

TUBERCULOSIS OF THE LUNGS.

CASE 1.

Caries of the vertebræ.

J. C.; aged 44; nativity, Massachusetts; admitted to the U. S. Marine Hospital, Boston, Mass., July 10, 1892; died November 26, 1892.

On admission patient had severe pain in back and abdomen, also in legs and thigh, which had troubled him for several months. There was protrusion of the spine, beginning with the fourth dorsal vertebra, and extending to the seventh. Breath sounds illy defined. A few weeks before death the patient lost power over his bladder, and the urine had to be drawn every three hours. About forty-eight hours before death he began to pass his water involuntarily. Marked hyperæsthesia of the upper extremities existed for ten days preceding death; also much pain over the sternum and epigastric region.

Necropsy (*forty-two and one-half hours after death*).—Post-mortem lividity present. *Rigor mortis* marked; general nourishment very poor; pericardial sac normal. All valves of heart competent; walls normal. Right ventricle contained fibrinous clot attached to wall. Weight of heart, after opening, 245 grams. Left lung firmly bound by pleuritic adhesions over its entire surface. Lung free from tubercle; one cicatrix, probably result of tubercle; weight, 365 grams. Base of right lung filled with miliary tubercles; pus in bronchial tubes at this point; weight, 1,110 grams. Liver light brownin color, friable; weight, 1,420 grams. Yellow gravel in pelvis of both kidneys. Weight: Left, 135 grams; right, 140 grams. Sternum fibro-cartilaginous, apparently had never become ossified. Body of fourth dorsal vertebra entirely gone; bodies of third and fifth dorsal vertebræ were replaced by a cartilaginous substance, evidently produced by a reparative process. Small carious spot in body of fifth, with small quantity of pus.

CASE 2.

Chronic cystitis.

H. B.; aged 44 years; nativity, Tennessee; admitted to Marine Hospital, Cairo, Ill., April 1, 1893; died April 24, 1893.

History.—Patient emaciated; complained of cough, chills, and sweats, generally in the afternoon, and with some periodical indication of malarial infection. Dullness at apex of right lung and subcrepitant râles.

April 18.—Considerable œdema of penis with phimosis. The prepuce was slit up, allowing free evacuation of urine.

Necropsy.—Body greatly emaciated, *rigor mortis* fairly marked. Right lung studded with tubercle, not so marked upon left side. Heart normal; liver somewhat enlarged. Tubercular deposits in the mesentery. The bladder was about one-third the natural size, the walls greatly thickened and contained a small quantity of thickened urine. The penis was œdematous and gangrene had supervened. The patient had evidently had a chronic cystitis complicating a tuberculous condition.

CASE 3.

Pleuritic effusions.

B. B.; aged 42 years; nativity, Virginia; admitted to U. S. Marine Hospital, Cairo, Ill., April 7, 1893, with acute pleurisy of the left side; discharged April 29, 1893; readmitted with tubercle of lung; died May 12, 1893.

History.—Patient had been sick for a week at his home and treated by a local physician for pneumonia. There was complete dullness upon left side with evidence of fluid present. Under active treatment this disappeared to some extent. Chest aspirated under aseptic precautions and about 600 c. c. of fluid withdrawn, with improvement for a time. Evidence of tubercle of right lung present.

Necropsy (*six hours after death*).—Body emaciated; pericardium contained a slight excess of fluid and was adherent in places to the heart along the left ventricle, and also to the lung. The left cavity contained a small quantity of serous fluid of flocculent character; back layers of pleura were closely adherent and showed tubercular foci; upper lobe of right lung studded with tubercle. The heart contained antemortem clot in left ventricle, mitral valves slightly thickened; other organs in fair working condition.

CASE 4.

Empyema.

S. P. P.; age, 49 years; nativity, New York; admitted to Marine Hospital, Stapleton, Staten Island, N. Y., April 14, 1893; died May 4, 1893.

History.—Patient states that April 12, 1893, he had a chill followed by fever, and to-day, although no chill, he has had considerable pain in his back. He has had a cough for six days; soreness in right side; appetite variable; some nausea and vomiting; considerable thirst; bowels regular; dyspnœa on exertion for two or three years; occasional palpitation.

Physical examination.—Chest expansion poor; percussion dullness over lower lobe of right lung; increased vocal fremitus over same, also fine pleuritic friction sounds over lower portion and subcrepitant rales over upper portion of lower lobe of right lung. Hop poultice applied, and stimulants administered.

Evening of this day, April 14, 1893, rise of temperature and pain in chest. Phenacetin administered.

April 16, a. m.—Pain in chest continues, and also rise of temperature. Antipyretics again administered and continued when necessary through the duration of disease.

Morning of 18th, temperature nearly normal; patient greatly improved; stimulants discontinued. Patient remained in this condition until evening of 25th, when suddenly taken with acute pain in right mammary region; rise of temperature. Phenacetin administered. Temperature commenced to fall and continued to fall until a few minutes before death, it being in a great measure due to the collapsed state of the patient. Whisky, strychnia, and digitalis were administered, but notwithstanding patient sank rapidly and died at 2:20 p. m., May 4, 1893.

Necropsy.—Body poorly nourished. *Rigor mortis* marked. Post-mortem lividity not marked. Pupils dilated. Heart displaced to left side about 2 inches, and in a flabby condition. Left lung: Apex slightly infiltrated with nodules; lower and posterior parts in state of hypostatic congestion; left pleural cavity obliterated by adhesions. Right lung: In state of congestion, except around the edges; compensative emphysema; also lung compressed by pleuritic effusion. Pleura covered by layer of pus and fibrin. Pleural cavity of right lung filled with purulent fluid. Kidney slightly congested.

TUBERCULAR MENINGITIS.

E. H.; age, 22 years; nativity, Tennessee; admitted to the Marine Hospital, Memphis, Tenn., October 26, 1892; died February 21, 1893.

History.—The patient was treated at first for necrosis, tubercular in nature, of the os calcis, and an operation for the removal of the diseased tissue was performed. The second week in February a fever, with frontal headache and nervous symptoms, set in. The nervous symptoms increased and the patient became partially comatose. On February 19 there was marked Cheyne-Stokes respiration. Death took place two days later, the coma having become less pronounced but delirium being present.

Necropsy (*period after death not noted*).—The tubercular disease of the calcaneum had extended and involved the entire bone. Brain: The pia at the base was thickened and infiltrated with gelatinous material in places, especially around the optic chiasma. A less degree of thickening existed in the Sylvian fissure. A very few small white granules, apparently tubercles, were found in the pia of the Sylvian fissure. Two small tuberculous masses existed in the pia on the right hemisphere near the upper end of the fissure of Roland. The lateral ventricals were greatly distended with turbid fluid. The ependyma was thickened in places by gelatinous infiltration. The other organs were not examined.

TUBERCULOSIS OF THE LUNGS.

Myelitis.

W. G.; native of England; 66 years old; admitted to U. S. Marine Hospital, Baltimore, Md., March, 1893; died June 12, 1893.

History.—Previous to entering hospital patient had been having colds off and on for six weeks. Had been troubled with severe cough and catching pain in right side of chest. He was emaciated and anæmic, had feeling of lassitude, was very weak and expectorated clear, glairy mucus.

Physical examination.—Showed increased respiratory murmur and sibilant râles in both lungs, dullness at apex of left lung and over central lobe of right, and increased vocal fremitus. Hydrocele of left testicle was also present.

March 17.—Complained of being unable to pass water, and also of pain in back; had had stricture of the urethra since 1884.

April 4.—Complained of pain in right side.

April 13.—Complained of pain in back, which he said he had had for about three months; sensation of numbness in feet and legs. There was marked atheroma of arteries.

April 21.—Constipation present for some time; stomach and bowels full of gas.

April 22.—The tympanites greatly increased; urine dribbled away.

May 9.—Small sore on buttocks. For some weeks previous to his death his urine had to be drawn by catheter, owing to paralysis of bladder. The tympanites was reduced by introduction of a rectal tube. His lower extremities became paralyzed.

Necropsy (*fourteen hours after death*).—*Rigor mortis* slight. Patient was much emaciated; bed sore over sacrum and one side of buttocks. Liver somewhat larger than normal, pale in color, and on section dark-colored blood oozed out. Kidneys normal in size; capsule peeled off easily, and on section the line of demarcation between cortical and medullary portion was slightly obliterated. The pelvis contained considerable fat. On anterior surface there was a small blister-like projection which projected into the kidney substance about 4 mm. and looked like a distended Malpighian body. Stomach filled with gas and extended from left to right hypochondriac regions. Intestines also distended with gas. Spleen smooth and normal in size. Lungs adherent to chest walls and very dark in color. A large cavity in superior lobe of left and middle lobe of right. Crepilated on pressure, were spotted with small, elongated, whitish nodules which looked like tubercles. The pleural cavities were almost obliterated. The pericardium contained small amount of bloody serum. Heart was normal and contained a large clot of blood. Spinal cord: There was a cheese like deposit in the dorsal region, about the eighth or ninth dorsal vertebra, between the bone and dura mater. In the subdural space corresponding to the above deposit, and also near the lumbar enlargement, were plates, cartilagenous in appearance, 2 by 4 mm. in size. The cord was soft close to the deposit, and on section the posterior bones were more or less degenerated.

TUBERCULOSIS OF THE LUNGS, PERITONEUM, AND INTESTINES.

P. N.; aged 31 years; nativity, Norway; was readmitted to the U. S. Marine Hospital, New Orleans, La., February 6; died June 12, 1893.

History.—After recovery from a malarial attack of some two months' duration, the symptoms of advanced pulmonary tuberculosis required attention. The cough, expectoration, night sweats, hectic fever, and progressive emaciation, with daily loss of strength, proceeded with but slight palliation from medical treatment. He faded away and died.

Necropsy (*six hours after death*).—Body that of a muscular young white man in extreme emaciation. *Rigor mortis* feeble. Heart anæmic, otherwise normal; weight, 230 grams. Lungs, left, weight 920 grams; studded with tubercles. The right lung had disappeared save a few friable scraps adherent to chest wall. Peritoneum full of large, cheesy, unctuous tubercles. Small intestine loaded with tubercles, and large intestine showing points of ulceration. Liver normal; weight, 1,500 grams. Kidneys, left, normal; weight, 160 grams; right showing a few tuberculous points; weight, 130 grams. Spleen, weight, 110 grams; pale and flabby.

TUBERCULOSIS OF THE LUNGS AND PERITONEUM.

M. K.; aged 22 years; nativity, Arkansas; was admitted to the U. S. Marine Hospital, New Orleans, La., December 31, 1892; died February 12, 1893.

History.—The patient had been in failing health for some months. He sought relief from a malarial fever (remittent type), and was much benefited. He was readmitted for treatment for tuberculosis, presenting the usual signs of emaciation, hectic fever, cough, expectoration, sweats, and progressive weakness, with frequent slight hemorrhages. A liberal diet, stimulants, soothing cough mixtures, and general hygiene greatly comforted him. He sank and died while asleep.

Necropsy (*twelve hours after death*).—Body that of a muscular young negro man, greatly emaciated. *Rigor mortis* present. Heart very small, dense; surface showing old inflammatory action; weight, 225 grams. Pericardial sac thickened. Valves competent except tricuspid, which had a singular appearance of withering. Lungs both studded with yellow and gray tubercles, many broken down and liquefied; left lung adhering so strongly to surrounding parts as to prevent removal. Right lung, weight, 525 grams. Pleural cavities obliterated. Peritoneum inflamed and studded with gray and yellow tubercles. Stomach showed a tuberculous deposit on the serous surface. Intestines studded with tubercles, which were also found in liver (weight 1,315 grams), kidneys (left 140, right 155 grams), and spleen (weight 425 grams).

TUBERCULAR PERITONITIS.

W. R.; seaman; colored; aged 47 years; a native of South Carolina; entered the marine ward of the St. Francis Xavier Infirmary, Charleston, S. C., on October 25, 1892; died November 3, 1892.

History.—Abdominal pain and swelling for several months, with emaciation but no enteric trouble. *Status præsens*: Emaciation extreme; conjunctival and mucosa of mouth quite anæmic; heart action feeble; tension lowered. Abdomen swollen and tympanitic, with some bulging on left side, with dullness. Temperature, 38° C.; pulse, 125; respiration, 20. Although abscess with thickened walls was diagnosed, the man was too weak for operation, and it was postponed until there was some increase of strength. Stimulants and predigested foods given systematically, and with slight gain in strength. On November 1 the abdomen was opened over the crest of the swelling. The peritoneum was found densely infiltrated with a new growth and forming the upper limiting wall of a large abscess, which was thoroughly drained, irrigated, and packed with iodoform gauze, a glass drainage tube depending from lower angle of incision. Reaction from anæsthetic very imperfect. Death from exhaustion. Cover slips prepared from contents of abscess gave numerous tubercle bacilli reacting with fuchsin normally, while numbers gave evidence of degeneration. Covers from contents of new growth in peritoneum also gave normal bacilli.

Necropsy (*limited to abdomen*).—Peritoneum generally thickened and firmly adherent to intestines; mesentery thickened and full of tubercular masses; glands enlarged and cheesy; intestinal serosa studded with gray tubercles; mucosa pale, but not noticeably tubercular; capsule of liver and kidneys; the spleen and the lymphatics of diaphragm all tubercular. Owing to request of relatives, no further examination was made.

GENERAL TUBERCULOSIS.

CASE 1.

R. H.; age, 35 years; nativity, England; admitted to U. S. Marine Hospital at San Francisco, February 3, 1893; died February 13, 1893.

History.—Patient complained of incessant cough, dyspnœa and pain in chest, painful and difficult swallowing, and aphonia. Sickness began December 16, 1892. The first symptom was cough. On January 5 he suffered nearly a total loss of voice. Emaciation was rapid. Patient could only swallow a small quantity of condensed milk. Physical examination disclosed physical signs of tubercle of lungs. Laryngoscopic examination showed infiltration and ulceration of arytenoids and epiglottis, as well as ulceration of left vocal cord. Temperature was irregularly remittent, maximum, 39.8° C.

Necropsy.—Left lung, a few adhesions encountered at apex; right lung, many recent pleuritic adhesions. Bronchial lymph glands greatly enlarged and pigmented. Both lungs had a lobulated feel. Very little crepitation. Both apexes carnified. Numerous small tubercular foci encountered throughout both lungs. Some œdema and congestion present. No cavities found. Pathological processes more pronounced in right lung. Larynx and mucous membrane lining layrnx thickened, infiltrated, and somewhat ulcerated. Intestine, in ileum many ulcers found; some were quite large. The transverse muscular fibers of intestine formed floor of ulcers. Ulcers had irregular, ragged, everted edges and smooth bases. Mesenteric lymph glands much enlarged.

CASE 2.

J. S.; aged 21 years; nativity, Russia; was admitted to the U. S. Marine Hospital, Port Townsend, November 24, 1892; died February 16, 1893.

History.—The patient gave a history of having contracted a cold a few weeks previous to entry to hospital. He had high evening temperature from the start, and lost weight very rapidly; had anorexia and troublesome diarrhea. Sleep could not be obtained except by the use of morphine. He was delirious at times; and when admitted his condition simulated enteric fever, and was very serious. The temperature ranged from 38° C. to 40° C., the pulse very rapid and weak. The tongue was dry, cracked, coated with a brownish coat, and red around edges. The skin was very hot and dry. Body very much emaciated. The chest examination was almost negative, as there were very few physical signs of pathological change. The percussion sound seemed to be hyper-resonant; and with the exception of a slight pleuritic sound on the right side there was no other lesion detected. There was no cough, nor was there expectoration. With the high temperature, delirium, and diarrhea, the case could easily have been mistaken for enteric fever.

Pressure on the abdomen at any point caused pain. The patient was placed on stimulants and milk diet, which caused a lowering of the temperature, checked the diarrhea, and general improvement followed. The delirium soon passed away, and in three weeks he was able to sit up for some hours each day. His appetite gradually improved up to the middle of January, when he began to grow worse, the fever increasing, the diarrhea becoming troublesome, and the general condition bad. During his entire illness there had never been cough nor expectoration. He gradually grew worse and died of exhaustion.

Necropsy (sixteen hours after death).—The body was very much emaciated. No post-mortem lividity. The thorax was opened and the contents examined. The heart was normal in size and the valves were perfect. There was a large post-mortem thrombus in the right side of the heart. The lungs were firmly bound down by pleuritic adhesions. They were of purplish color, and looked like coal miners' lungs. On removing them and making sections they were found to be studded throughout with miliary tubercles. There was not a spot that had softened, and that explains why there was no cough nor expectoration. A thin section of lung floated in water. There was no consolidation in any part. The abdomen was opened and the contents examined. Extensive tuberculosis existed throughout. The peritoneum was studded over with tubercles and was bound down. The liver was larger than usual, friable, and there were several caseous deposits the size of a hazelnut. These spots were undergoing caseation. The spleen was very large, congested, and friable. It did not contain any deposits, though the folds of peritoneum immediately covering it were covered with tubercles. The kidneys were large, hyperæmic, and exuded considerable blood on section. On the convex surface of the left kidney were two whitish spots. The capsule of the kidney at these points was adherent. The spots were fibrous, and were evidently healed tubercle tissue. The pyramidal bodies were very much inflamed, and the pelvis of the left kidney contained pus. The other organs were normal. The skull was not opened.

CASE 3.

S. L.; aged 23 years; nativity, Norway; admitted to marine ward Cleveland City Hospital March 30, 1893; died April 15, 1893.

History.—Very little information could be obtained. Cough had probably been present for a year. After admission cough not severe, sputa small in quantity. No dullness on percussion over lungs, but pain produced in left mammary region. A few coarse râles in both upper lobes. No hæmoptysis. Epistaxis three times in first few days. Abdomen quite tympanitic. Tendency to diarrhea. Petechial eruption on abdomen. Headache from day of admission. This was the main symptom. Coma supervened during last few days.

Necropsy (*twelve hours after death*).—Emaciated. Heart small and pale. Pericardial sac normal. A vegetation was found on auricular surface of mitral valve. Valves all competent. Walls of heart thin. Thoracic aorta normal. One small ulcer in larynx. Adhesions posteriorly and at apex in right pleural cavity; none in left. Both lungs studded with small tubercles, most marked in upper lobes; no cavities. Peritoneum normal. Stomach normal. Small intestines not inflamed; contained tubercles of pin-head size, increasing in abundance from above downward, one ulcer just at lower end of ileum. Large intestines contained tubercles of same size, most abundant above. Liver: Surface covered with minute elevations, in appearance like sudamina, really tubercles. Section of liver pale brown, mottled with yellow spots (fat); tissue firm. Weight of liver, 2.5 kilos. Gall bladder full; no concretions. Pancreas, normal appearance. Kidneys: Both large; normal appearance externally; section showed many whitish points—tubercle.

"Sago" spleen: Weight, 1.25 kilos; size, 26 by 15 by 6 cm.; color, bright red. Surface looked as if covered with pustules, a little larger than a pin's head. Section, brilliant red; tissue softer than normal; granular feeling. Whole spleen seemed composed of aggregation of yellowish granules, size of pin head and smaller, in a red stroma. Dura mater adherent to skull. A few tubercles seen on dura and pia at vertex near median line. No excess of fluid. No injection of vessels on surface of brain. Brain not removed.

CASE 4.

I. T.; aged 50 years; nativity, United States; admitted to the marine ward of the German Hospital, Philadelphia, Pa., August 4, 1892, and died September 12, 1892.

Patient on admission suffered from cough. On physical examination it was found that the right lung was consolidated. Sputum examined and tubercle bacilli were found in it. Hectic fever was also noted. The routine treatment for tuberculosis of the lungs was carried out, and cod-liver oil, whisky, atropine, quinine, and camphoric acid were administered. Toward the end the patient had diarrhea and much pain in his abdomen. Abdomen became tympanitic and dull in the flanks. Later he became unconscious and symptoms of meningitis began to show themselves. Erratic movements of the hands, tongue, and eyeballs. Pupils irregular and fixed.

Necropsy.—Thorax opened and lungs found to be diseased, especially right, which was entirely tuberculous, and throughout it cavities were found. Pleura adherent. Heart normal. Abdomen: Liver normal; tuberculous peritonitis discovered, with large amount of fluid in the peritoneal cavity. Ileum opened; ulcers found in it. Prostate enlarged and cheesy. The brain was exposed and the membranes were found to be studded with miliary tubercles, especially on the basilar portion.

LEUCOCYTHÆMIA.

Erysipelas.

D. S.; aged 31 years; nativity, Michigan; admitted to marine ward Cleveland City Hospital October 10, 1892; died December 11, 1892.

History.—Father and one sister died of phthisis. Patient has had frequent attacks of epistaxis all his life, but no other hemorrhages. Three years ago he had an attack of chills and fever. In June, 1890, he was operated on for organic stricture of urethra following gonorrhea. In July and August, 1892, he received office treatment for dyspeptic symptoms.

Examination.—Face pallid, anæmic; abdomen greatly distended, slight amount of general anasarca. Spleen enlarged, extending 3 cm. to right of median line and about 4 cm. below umbilicus, the lower part dipping into the pelvis so that the border could not be traced. Two very marked notches were found just above umbilicus. Liver somewhat enlarged. Heart pushed upward, apex beat just above left nipple. No cardiac murmur. Heart's action good. Urine, specific gravity 1017, acid, excess of amorphous urates, no albumen. No enlargement of lymphatic glands. He complained of debility, dyspnœa, difficulty in retaining and digesting food, and epistaxis one or more times each day. An examination of the blood revealed the fact that the number of white corpuscles was greatly in excess of the normal ratio. Vomiting and epistaxis, continued every day with few exceptions, occurring usually about 11 p. m. His strength, however, improved and his face gained a better color. The treatment was ferrum redactum and liq. potass. arsenitis; the latter increased to 0.80 c. c. three times a day and maintained at that dose.

December 1.—The border of spleen was a trifle to the left of the median line and did not extend so far into the pelvis as at time of admission. At this date a carbuncle developed on left side of upper lip.

December 5.—Erysipelas extended from carbuncle. The erysipelas spread over whole face and larger part of scalp and led to his death. From date of admission there was a slight evening rise of temperature, gradually increasing to the end. Pulse 85 to 100, increasing to 115 to 130 during the last week.

Necropsy (twenty hours after death.)—*Rigor mortis* present. Pericardial sac contained 210 c. c. of yellow fluid with flocculi; surfaces covered with flocculent material. Heart normal; wall of left ventricle seemed very thick. Thoracic aorta normal. Right pleural cavity contained 270 c. c. of yellow fluid with flocculent deposit on surfaces. No fluid in left pleural cavity. Lungs contained excess of blood. Peritonal cavity contained considerable fluid. Liver measured 31 by 28 by 9 cm., brownish red color; weight a trifle above 8 kilos. Appearance on section normal. Gall bladder very large, distended with bile; no concretions. Kidneys of normal size and color; the left contained an infarction, section of which had the appearance of yellowish-white lines perpendicular to surface of kidney. Spleen measured 35.5 by 21 by 9 cm., bright red color, tense, shining surface. Section showed same color, otherwise normal. Splenic vessels greatly enlarged. Weight of spleen 07 kilos.

CEREBRAL HEMORRHAGE.

CASE 1.

J. B.; age, 62 years; nativity, Ohio; admitted to the U. S. Marine Hospital, Chicago, Ill., June 5, 1893; died June 13, 1893.

History.—Entered hospital suffering with acute bronchitis and occasional asthmatic attacks. Loud, sonorous rales could be heard on auscultation. Patient seemed delirious first few days after admission, and altogether quite apathetic; often answering questions indirectly, or giving a meaningless answer. Complained of no pains. His arteries were markedly atheromatous. On June 13, after an attack of vomiting, he became suddenly unconscious, pulse weak, face flushed; the pupils first dilated, then contracted; breathing became difficult and laborious, and death resulted within a half hour.

Necropsy.—General nourishment good, no *rigor mortis,* and only very slight lividity. The pupils appeared normal. The heart, after opening, weighed 570 grams, the pericardial sac, contained some fluid. The left ventricle was dilated, and its wall hypertrophied. The thoracic aorta in it first portion showed calcareous degeneration, the other arteries and veins had undergone a fibroid degeneration. The left lung weighed 330 grams. The pleural cavity contained 1,500 c. c. of serum; was slightly congested and somewhat emphysematous. There were also extensive adhesions. The peritoneal cavity was full of serous fluid. The liver showed venous congestion; was dark colored and weighed 1,340 grams. The gall bladder and ducts were full of fluid bile. The left kidney was congested and weighed 170 grams. The bladder was full. Head, scalp, and skull, normal. The dura mater showed an atheromatous degeneration of its arteries. The brain weighed 1,470 grams, and on removing the calvarium about 40 c. c. of blood escaped from the cavity. It was evident that there had been a hemorrhage, though it was impossible to locate the vessels on account of the fluid condition of the blood, and consequent absence of a clot. The spinal canal contained some serous fluid.

CASE 2.

C. M.; age, 36 years; nativity, United States; admitted to U. S. Marine Hospital at San Francisco, April 12, 1893, and died April 14, 1893, at 6:45 o'clock p. m.

History.—When admitted patient was suffering from hemiplegia and aphasia. A friend who accompanied him stated that while patient was standing on deck of vessel, he fell suddenly and was paralyzed and unable to speak when found. On admission patient was conscious, but early in morning on April 14 he became comatose, and gradually sunk until the evening, when death occurred.

Necropsy (*eighteen hours post mortem*).—Body well nourished, posterior discoloration not excessive. Brain: Much blood escaped on removal. Meninges were congested especially over convexity and in ascending portion of fissure of sylvius. Longitudinal sinus partly filled with blood. Pia mater opaque and thickened. Considerable lymph present beneath pia mater. On section the brain appeared much congested. Ventricles, capsules, and basal ganglia appeared normal. No appearance of hemorrhage in inner structures. Cerebellum normal. Liver considerably congested. Heart normal; valves competent. Lungs œdematous and much congested. Kidneys normal. Spleen congested.

CASE 3.

A. C. B. (colored); age, 48 years; nativity, West Indies; admitted to U. S. Marine Hospital at San Francisco, Cal., January 14, 1893; died February 9, 1893, at 1:05 a. m.

History.—On admission hemiplegia of right side and aphasia were present. On account of the aphasia no satisfactory history could be obtained. On February 7 paralysis of left side ensued.

Necropsy.—Brain, weight 1,244 grams. The arachnoid on the superior lateral surface of left lobe was opaque and presented evidence of recent inflammatory action; small amount of exudation present. Brain was much congested. In the internal capsule of the left side a spot of acute softening occupied the site of the genu and anterior two-thirds of the posterior limb. In the internal capsule and lenticular nucleus of the right side the remains of an old blood clot were found. Arteriosclerosis present.

CASE 4.

H. W.; age, 57 years; nativity, Massachusetts; admitted to U. S. Marine Hospital at San Francisco, Cal., May 3, 1892, died February 3, 1893.

History.—When admitted had ordinary symptoms of cirrhotic kidney. He steadily grew worse. He also complained of rheumatism. On the day of death, while standing near the bed to micturate, he suddenly fell and became partly unconscious—left side paralyzed. In a few moments insensibility ensued, with stertorous breathing. He steadily grew worse and died about midnight.

Necropsy (thirty-six hours post mortem).—Body emaciated. *Rigor mortis* still present. Brain: A recent hemorrhage, evidently at first into right lateral ventricle, had excavated the whole right lobe of cerebrum, and the posterior part of the right ventricle, having apparently burst through the right lateral ventricle into the left lateral ventricle. The entire arterial system was atheromatous. No miliary aneurism was found. Thorax: lungs normal. Heart much hypertrophied; valves competent. Abdomen: kidneys cirrhotic; the right one contained three large cysts.

CASE 5.

Abscess of the brain.

E. D.; aged 47 years; nativity, Ireland; was admitted to the U. S. Marine Hospital, Port Townsend, Wash., August 26, 1892; died February 25, 1893.

History.—In June, 1892, he strained his back very severely and was in the hospital for several weeks. He left the hospital, but returned very soon with marked paralysis of the right side of the face, and complete deafness in right ear. With the exception of a severe pain referred to the right parietal region, and contraction of the pupil of the right eye, he did not have any noticeable trouble. He denied ever having had syphilis, but there were several scars on the body and two nodes on the tibia. He was placed on antisyphilitic treatment and gradually improved until January 5, 1893, when he had severe convulsion of the left arm, face, and leg. Was unconscious for several hours; had two more attacks during the night. After he regained consciousness from the last attack the facial paralysis had disappeared. The iodides were pushed and he improved until February 15, when he had another convulsion, with loss of consciousness. He grew worse rapidly, and died suddenly on February 25.

Necropsy (twenty hours after death).—Body fairly well nourished. No post mortem lividity. The skull was opened and the brain examined. The membranes were congested, and along the longitudinal sinus there were deposited small red granular bodies that could be crushed between the fingers. These bodies were smaller than the finest shot. The membranes were not adherent at any point. The cerebrum was pale and soft. It was handled with difficulty on that account. On severing the cord, turning up the medulla, and exposing the fourth ventricle, it was found to contain a large red clot of blood of recent formation, the probable immediate cause of death. All of the ventricles were filled with fluid. In the lateral ventricle, intimately connected with tænia, were numerous little red granular bodies smaller than those found in the membranes. Near the Island of Reil, in the cerebral tissue proper, was an abscess cavity filled with thick, greenish pus. This cavity was about the size of a small egg. The walls and tissue around the abscess were thickened and indurated. There was extensive softening of the cerebral tissue. The thorax was opened and contents examined. The heart was slightly enlarged and fatty. The lungs were normal. The abdomen was opened and the contents examined. The liver was small and contracted. The spleen was so soft and friable that it could not be removed. The kidneys were very large and the tissue was softer than usual; aside from that there was no pathological change. The other organs were normal.

CASE 6.

J. H.; colored; aged 59 years; nativity, Maryland; admitted to U. S. Marine Hospital, Baltimore, Md., April 11, 1893; died April 17, 1893.

History.—Brought to hospital in ambulance unconscious. There was paralysis of right side, and the breathing was slow and labored. Pulse very weak, scarcely perceptible at wrist. Heart beat about 75 a minute.

Necropsy.—*Rigor mortis* well marked; a mass of blood clot equaling some 60 c. c. was found in the left lateral ventricle of the brain. The skull was unusually thick and the dura mater seemed very much engorged with venous blood. Normal amount of fluid. Weight of cerebellum, cerebrum, and medulla oblongata, 1,445 grams.

CASE 7.

L. T.; aged 28 years; nativity, Alabama; admitted to U. S. Marine Hospital, Mobile, Ala., September 16, 1892; died December 14, 1892.

History.—Patient when admitted was suffering with aphasia, and paralysis of the right side of the body, being most pronounced in the leg. He improved very much under treatment, but soon had another attack of cerebral hemorrhage and grew worse. He died in one of the apoplectic attacks.

Necropsy (*eighteen hours after death*).—External appearances: Body much emaciated; *rigor mortis* slight. Post mortem lividity marked about head and neck. Cranium: Dura matter was thickened and congested. The pia matter was much congested, all the blood vessels being much dilated. The ventricles were filled with fluid. The arteries showed evidences of disease. Broca's convolution was much softened. A similar diseased condition was found in the ascending frontal convolutions on the left side. Brain weighed 1,600 grams. Other organs were not examined.

CASE 8.

G. B. W.; aged 51 years; nativity, New York; admitted to the U. S. Marine Hospital, Mobile, Ala., February 2, 1892; died July 25, 1892.

History.—On admission was suffering with paralysis of the left side of the body, which had existed for some time. Very little improvement in his condition was produced by treatment. On the night of the 24th of July he was taken suddenly worse; had convulsions, sterterous breathing and all the symptoms of cerebral hemorrhage, and died in ten hours.

Necropsy (*fourteen hours after death*).—External appearances: Post mortem lividity marked about the face and neck. *Rigor mortis*, slight; and body fairly well nourished. Thorax: Perricardium, normal; heart, normal; weight, 450 grams. Several patches of atheromatous degeneration were found in the thoracic aorta. Numerous old pleuritic adhesions were found in both the right and left sides. The lungs were normal; the left and right being of the same weight, 500 grams. Abdominal cavity: The stomach and intestines were normal. Lower, normal, weighing 1,850 grams; left kidney, weighed 160 grams; the right, 165 grams. Prostate gland was enlarged, and the urethra showed evidences of an old stricture, which had been relieved by an operation. Cranium: The scalp and skull were normal; membranes of brain were slightly congested; brain weighed 1,500 grams. The lateral ventricles were filled with recently coagulated blood; the hemorrhage having probably taken place from the middle cerebral artery. The internal capsule showed marked softening and degeneration. That on the right side of the brain being affected. Right corpus striatum showed evidences of an old hemorrhage and was softened. The cerebral arteries had become atheromatous in several places.

CASE 9.

Traumatic.

J. W.; aged 58 years; nativity, America; admitted to the Marine Hospital, Stapleton, Staten Island, N. Y., July 31, 1892; died August 4, 1892.

When brought to the hospital patient was in an unconscious condition. The history obtained from his friends was that during the night he had had a fall which rendered him unconscious. On inspection a lacerated wound about 3 cm. in length was seen, situated over the right parietal bone about 6 cm. above mastoid process. No fracture of bone was found; right pupil dilated, left contracted; contusion of both eyes; unconscious and could not be aroused, though apparently sensible to pain; no paralysis; about 100 cm. of urine were drawn off with catheter. Temperature, 36.5; pulse, 64, and strong; respirations, 25; no stertor.

July 31, p. m.—Temperature, 36.5; pulse 78, and strong and full; respirations, 28, and quiet; pupils in same condition; very restless and passes his urine involuntarily.

August 1, a. m.—Temperature, 36.4; pulse, 84, and strong; respirations, 28; opens his eyes but unable to speak; swallows milk when given slowly; passes fæces and urine involuntarily; no paralysis.

August 2, a. m.—Temperature, 37; pulse, 72; respirations, 22. Patient seems to be gradually returning to consciousness and speaks when attempts are made to arouse him. Still has involuntarily evacuations of fæces and urine.

August 3, a. m.—Temperature 36.5; pulse 92, and strong; respirations, 24. No paralysis; pupils about normal. Still passes fæces and urine involuntarily.

August 4, a. m.—Temperature, 37; pulse, 96; respirations, 26, and quiet. Seems to be rational but unable to articulate. When asked to protrude tongue does so with difficulty and allows it to remain out until told several times to withdraw it. Still passes urine and fæces involuntarily.

August 4, p. m.—Temperature, 37; pulse, 78, and very weak; respirations, 48, and labored; pupils dilated; insensible to pain, and can not be aroused. Rapidly grew worse, and died at date stated above.

Necropsy (*fifteen hours after death*).—Body well nourished; *rigor mortis* well marked; hypostatic congestion posteriorly. On removing the scalp no fracture was found. Beneath the calvarium a large diffused blood clot, about 5 cm. in length and about 3 cm. in breadth, was found between the dura mater and skull in the right side, and also another as large as the first was found between the arachnoid and pia mater. The clot pressed on the right parietal, occipital, and temporo-sphenoidal lobes. A clot of blood was also found on the left side nearly as large as the one on the right side and pressing on the corresponding parts of the brain. The middle meningeal artery of right side was ruptured; the one on the left side was intact. The membranes were deeply congested and vessels filled with blood. The brain was congested, but no hemorrhage was found, and the tissues appeared to be normal.

ACUTE CEREBRAL MENINGITIS.

M. K.; aged 40 years; nativity, Norway; admitted to the marine ward, St. Vincent Hospital, Norfolk, Va., April 24, died April 30, 1893.

History.—Had been sick seven days. Showed violent and persistent headache, with sopor. Breathing rapid and entirely costal. Tenderness under border of the left ribs. Pulse, 56, full and slow. Headache continued until death. Other symptoms disappeared in thirty-six hours. Never delirious, but tendency to coma increased.

Necropsy (*three hours after death*).—Large muscular man, but in good condition. Brain: meninges adherent over the whole vertex, with soft, fibrous, purulent exudation; vertex of brain softened. Fluid in ventricles bloody and thick. All organs of the chest and abdomen, including kidneys, normal.

ACUTE INFLAMMATION OF THE BRAIN AND MEMBRANES.

G. B.; aged 23 years; nativity, Austria; admitted to Marine Hospital, Stapleton, Staten Island, N. Y., March 6, died March 7, 1893.

History.—When patient was admitted he was having paroxysms of wild delirium every two or three minutes, in which he would drag himself about the floor, shouting and raving. During the intervals he would lie quietly, the eyelids would close, and for a moment it would seem that he was asleep, when of a sudden the delirium would again seize him. There was no evidence of pain. Temperature, 37.3° C. Pulse, 76. Respirations, 20. Tongue could not be seen, but there were sordes on the teeth and dried mucus about the lips. Lungs and heart were apparently normal. No indication of disease about the liver or spleen. The bladder was greatly distended; a catheter was introduced and 800 c. c. of reddish-colored urine withdrawn; specific gravity, 1.040; acid reaction; considerable quantity of albumen. Administration of sedatives quieted the delirium. Early the following morning signs of œdema of the lungs appeared. Patient sank into a coma, from which he could be momentarily aroused. Oedema increased, face and extremities became cyanosed, temperature suddenly rose to 40.1° C, and patient died at 3.25 p. m.

Necropsy (nineteen hours after death).—Body well nourished. Post-mortem rigidity marked. On removing the calvarium a considerable quantity of blood escaped. The meningeal vessels were engorged. Directly over the center of the superior longitudinal sinus the dura mater was inflamed, discolored, and congested. Owing to the dark color of the Pacchionian bodies they appeared to be elevated. The vessels beneath the pia mater were injected, and on the surface of that membrane at various points were fibrinous deposits. On the under surface of the medulla was a slight layer of fibrin. The cerebral cortex was darker than normal, and presented small hemorrhagic foci. On section of the white matter the puncta hemorrhagica did not appear more quickly than normal, but in larger number. The valves of the heart were competent. Both lungs were deeply congested. Liver somewhat enlarged and the bile ducts were filled with bile. Spleen normal. The kidneys were pale, and between the pyramids of Ferrein were white striæ which interlaced beyond the apices of the pyramids, forming a network which extended to the cortex. Bladder normal.

INFLAMMATION OF THE BRAIN AND MEMBRANES.

Scelerosis of the posterior columns of the cord.

G. C.; aged 48 years; nativity, Ireland; was admitted to Marine Hospital, Stapleton, Staten Island, N. Y., May 20, 1892, and died March 27, 1893.

History—Patient said on admission that he had been sick for two years, and that just prior to admission he had fallen down, partially losing consciousness; when consciousness returned he found he was unable to walk. Apparently from this fall, his mental condition was such that he could not give any clear account of his condition. Physical examination of chest and abdomen did not reveal any abnormalities. He weeps on being questioned and denies history of gonorrhea or syphilis. Both patellar reflexes greatly exaggerated. No ankle clonus. Has great difficulty in standing alone, and while walking the ball of foot scrapes the floor. No "girdle sensation." He has no control over sphincters. Patient remained in this condition until about August 11, when he had a paraplegic convulsion for about twenty minutes, followed by paralysis of the muscles of the left side of the body, which disappeared, with the exception of the left leg, the following day. As his condition became worse his hands were confined at night. About the middle of December patient began to grow worse. On March 21, at 11.15 p. m., patient had another attack; he was in a semicomatose state, the whole of the left side of the body being in a state of clonic spasm. The tongue was drawn to the left. The day following there was considerable nystagmus. Patient remained in this condition until the 27th, when he died at 8.36 p. m.

Necropsy (*twelve hours after death*).—Body emaciated. *Rigor mortis* well marked. Hypostatic congestion posteriorly. Bed sore over sacrum. Upon removal of calvarium the dural veins are found to be congested, as is also the brain, which is somewhat harder than normal. Pia mater very much thickened. There is a slight hemorrhage in cortex over Sylvian fissure, due to an atheromatous condition of arteries. Vessels of both lateral ventricles, and choroid plexuses congested. Naked eye appearance of lenticular neucleus on right side differs from that of the left, but the exact change could not be made out macrescopically. The pia mater over the motor area of the right cerebral hemisphere was very much thickened and congested. The meningeal, cerebal, and basilar arteries were very much distended and decidedly atheromatous, so as almost to break under pressure.

CEREBRAL MENINGITIS.

J. K.; aged 32 years; nativity, New York; admitted to the U. S. Marine Hospital, Baltimore, Md., December 8, 1892; died March 13, 1893.

History.—On admission was suffering from severe case of orchitis of right testicle. Gonorrhea had preceded the orchitis, but there was no discharge from penis at the time of admission. Orchitis subsided in about ten days, when patient developed symptoms of brain trouble, which commenced with a fit, followed by coma lasting several hours. On further examination patient gave history of several injuries of the head, the last injury occurring about four weeks before coming into hospital and the first about four years ago. There was a small depression in the frontal bone, just below left frontal eminence, due to the injury four years ago. He had a slight scalp wound just under the left parietal eminence. Patient gradually became worse until death occurred. A few days after the first fit he lost power of speech, became very weak and unconscious. Later on he rallied and became rational, but only for a short time, when another fit, with accompanying symptoms of the first, occurred. The contents of rectum and bladder were passed involuntarily. These fits took place at intervals until death.

Necropsy (*ten hours after death*).—*Rigor mortis* well marked. Body emaciated. Skull: Of normal thickness, with exception of squamous portion of left temporal bone, which was about twice as thick as that of the right temporal. Internal surface of squamous portion of temporal and left lesser wing of sphenoid very rough. Membranes of left hemisphere corresponding to rough projections of bone very much congested, and adherent to brain substance as though a clot had formed and undergone degeneration involving membranes and brain substance. Brain weighed 1,556 grams. Both hemispheres very soft, especially the left temporal lobe, which was of a mushy consistency. The corpus callosum and medulla oblongata breaking up in irregular granular masses resembling putty. Other organs not examined.

DEMENTIA.

Probably syphilitic meningitis.

L. R. S.; aged 43 years; nativity, unknown (supposed New York State); was admitted to the U. S. Marine Hospital, New Orleans, La., October 13, 1888, and died May 31, 1893.

History.—On admission no satisfactory account could be obtained, the patient alternating obstinate silence with a stream of obscene, profane abuse. He was transferred to the Louisiana Retreat for the Insane, where he required either the muffs or the padded room continuously. He was exceedingly destructive and could be clad only in a sheet, and had frequent homicidal outbreaks. Nature finally succumbed.

Necropsy (*twelve hours after death*).—Body that of a muscular middle-aged white man, much emaciated and scarred from self-inflicted injuries. *Rigor mortis* marked. The head only was examined. On removing the skullcap the sinuses were found full of dark, very fluid blood, a large quantity escaping. The encephalon was congested, and at the vertex a circular patch of syphilitic deposit, fastening the dura and pia mater firmly to the brain substance, of 4 cm. diameter was found, affecting both hemispheres, with a finely granular deposit along the course of the longitudinal sinus. Brain weight, after careful draining, 1020 grams.

VALVULAR DISEASE OF THE HEART.

Case 1.

Aortic.

G. K.; aged 36 years; nativity, England; admitted to marine ward, Cleveland City Hospital, December 27, 1892; died January 2, 1893.

History.—Twenty years ago he had two severe attacks of inflammatory rheumatism. In August, 1892, he first noticed a palpitation of heart and difficulty in breathing. He received hospital relief from September 23 to November 8, 1892. At that time he complained of great shortness of breath after slight exertion. Heart found enlarged; systolic murmur prominent over whole præcordia, with little difference of intensity. He left the hospital little improved and returned December 27, 1892, much worse. There was now œdema of lower extremities, and the interference with respiration was greatly increased.

Necropsy.—*Rigor mortis* present. Emaciated. Pericardial sac normal. Heart large, valves apparently competent, except aortic, which was replaced by a solid ring of calcareous deposit. Thoracic aorta normal. Both pleural cavities contained slight adhesions. Left lung normal; right normal, except small consolidation at base of upper lobe. Considerable fluid in abdominal cavity. Intestines normal, rectum had unusually small caliber. Liver rather small, probably fatty. Kidneys and spleen normal. Skull opened; brain and membranes normal.

Case 2.

Aortic.

J. W.; aged 49 years; nativity, New Hampshire; admitted to marine ward, Cleveland City Hospital, May 15; died June 1, 1893.

History.—He received treatment for rheumatism ten years ago in the hospital at Buffalo, and at this port six months ago for an organic stricture of urethra. No symptoms of other disease noted at the latter time. He was admitted this time complaining of dyspnœa, anasarca, pain in back, and cough, and stated he had felt perfectly well until three weeks previously. Action of heart regular, a murmur heard with each sound; the most pronounced murmur seemed to be a systolic one at apex. Urine scanty, no albumen. Anasarca and dyspnœa continually increased.

Necropsy (*twelve hours after death*).—Heart enlarged. Pericardial sac held 75 c.c. clear fluid; there were white patches on the visceral layer. There were perforations in the cusps of the aortic valve and the margins were ragged; in fact, long pointed pieces; no deposits on them. The margins of the mitral valve were thickened; otherwise, valve normal; other valves normal; walls of heart thinned; signs of atheroma at beginning of thoracic aorta. In left pleural cavity there were adhesions at the apex; and also to the pericardium and diaphragm; no adhesions in the right; large amount of clear serum on both sides and in abdominal cavity. Cicatrices were found at apices of both lungs, with cheesy deposit. Lungs œdematous; deep slate color. Intestines not opened. Liver of normal size, fatty, containing excess of blood. Kidneys, both rather small; the right had a cicatrix on border about center, depressed nearly through cortex. Urethra patent, but showing evidences of several strictures.

CASE .

W. W.; seaman, aged 41 years; a native of Massachusetts; entered the marine ward of the St. Francis Xavier Infirmary, Charleston, S. C., July 29; died August 10, 1892.

History.—Patient had been under dispensary treatment for several years, presenting at first a purely marked aortic stenosis, with subsequent contraction of the rigid leaflets, and insufficiency, which slowly induced hypertrophic dilatation of left ventricle, and finally relative insufficiency from auriculo-ventricular enlargement. Upon admission he gave every evidence of approaching dissolution from heart failure. There was a most intense venous engagement, the right heart overburdened, and the lungs ædematous; general anasarca. Treatment to meet symptoms.

Necropsy (*seven hours after death*).—Body of male adult; 170 cm. in height; 85 cm. around shoulders; general lividity; rigor slight; pupils dilated. Heart very much enlarged; in diastole; pericardial sac distended with 400 c. c. of fluid; valves, aortic (opening), 1.8 cm.; mitral, 3 cm.; left wall 1.6 cm. thick; right wall, 0.9 cm. thick; aorta dilated and atheromatous; some lime deposit in the valve leaflets. All organs congested, but macroscopically normal.

CASE 4.

Aortic regurgitation, with pulmonary abscess.

T. O.; aged 28 years; nativity, Norway; admitted to marine ward, St. Mary's Infirmary, Galveston, Tex., March 6; died March 9, 1893.

History.—A summary of chills and fever, followed in a week by distress in breathing and swelling of lower extermities. Condition of heart very bad, and no normal valvular sounds distinguishable. Exacerbations of fever while in hospital. Death from blocking of heart and lungs. History of rheumatism some years ago.

Necropsy (*one hour after death*).—Body well nourished. General anasarca, extending from above downward. Heart large and flabby; hypertrophy overbalanced by dilatation; right auricle distended with blood; pericardial sac containing some serous fluid. The mitral, tricuspid, and pulmonary valves were competent, while the aortic was incompetent. A ring of warty vegetations existed at the bases of the aortic semilunar valves within the ventricle, and the base of the right posterior valve was perforated by a large opening. Both ventricles were dilated, the walls of the left thickened. Left lung œdematous and adherent in several places; right lung œdematous, one large band of adhesion extending across to a necrotic focus on the anterior surface of the middle lobe. The necrotic focus was a small abscess, diametor about two c. c. with cheesy walls. It had perforated the surface of the lung, but was separated from the pleural cavity by adhesions. Liver probably in first stage of chronic interstitial hepatitis. Kidneys apparently normal. The spleen was more than twice its natural size. Some fluid in peritoneal cavity. A wrong diagnosis of endocarditis was made in this case on account of the history of an acute onset of the cardiac and general distress, the presence of fever also complicating the case. The sudden development of distress was due probably to the perforation of the semilunar valve.

CASE 5.

Aortic.

M. B.; aged 52 years; nativity, Germany; admitted to the marine ward of the German Hospital, Philadelphia, Pa., October 26, died October 28, 1892.

History.—Patient was suffering from general anasarca on admission and could scarcely walk. He was very much distressed and was breathing rapidly. The respirations were 30 to the minute, and his pulse 96; a history of syphilis was obtained from the patient. He failed rapidly, his abdomen becoming distended with ascitic fluid, which greatly hindered respiration. On auscultation a loud, blowing murmur could be heard over the aortic region; the murmur was both diastolic and systolic. The heart was greatly enlarged and the impulse very forcible. Albumen in considerable quantity was found in the urine; also tube casts. Digitalis, strychnia, and nitrite of amyl were administered, also whisky. Patient died suddenly in bed, and there was a slight hemorrhage from the mucous membrane of the mouth.

Necropsy.—There was marked general œdema. The thorax was opened and heart examined. Ulcerative endocarditis was noted; the leaflets of the aortic valves were necrotic and an aperture was found in one of them. The valve leaflets were stiffened and thickened at their bases. The heart was much hypertrophied and dilated, the right heart was full of blood, and coronary arteries were empty. Lungs were œdematous. The peritoneal cavity contained considerable serous fluid. The kidneys showed evidences of parenchymatous degeneration.

CASE 6.

Mitral Œdema—Hydrothorax.

P. B.; age, 48 years; nativity, England; admitted to U. S. Marine Hospital, Chicago, Ill., November 9; died November 25, 1892.

History.—Was in hospital from June 14, 1892, until October 20, 1892, under treatment for valvular disease of the heart. He left the hospital much improved. Was again admitted November 9, 1892, in a much worse condition than formerly. He had extreme pain over the precordial region and in back on left side. There was considerable œdema of the feet, legs, thighs, and genitalia. There were evidences of congestion in the lower portion of the lung on both sides. Murmur was well marked over the apex of the left ventricle, occurring before and during the cardiac systole. There was great weakness, increasing dyspnœa, and loss of appetite. Pulse weak, at times almost imperceptible. Treatment consisted of efforts to stimulate the heart and to relieve pain.

Necropsy.—The heart weighed 350 grams. The mitral valve had deposits of considerable thickness in its substance, calcareous in nature. The auriculo-ventricular valve was contracted. Left auricle dilated, as was the right auricle. Right ventricle hypertrophied. The left lung was consolidated posteriorly, and weighed 770 grams. There were tough pleural adhesions on this side. The right lung weighed 570 grams, and was displaced upward by a large amount of fluid in the pleural cavity. There was evidence of recent pleuritic exudation. The liver was congested, dark, and weighed 1,220 grams. Both kidneys were congested; the left weighed 160 grams, the right, 130 grams. The spleen was congested, and weighed 170 grams.

CASE 7.

Mitral embolism of the lung and lungs.

A. B.; aged 28 years; nativity, Newfoundland; admitted to the U. S. Marine Hospital, port of Boston, Mass., June 25; died July 11, 1892.

The only history that could be obtained was that he had been feeling badly for three weeks. Severe pain in both hypochondriac regions when he drew a deep breath. Bowels constipated; appetite very poor.

June 14.—Sounds of heart and breath sounds very feeble, no râles or heart murmurs can be detected.

June 15.—Vomits occasionally.

June 17.—Dyspeptic symptoms very marked; pain and feeling of weight in stomach a short time after eating.

June 18.—Vomited again yesterday; much pain and tenderness in epigastric region.

June 20.—Patient persistently constipated.

June 23.—Vomited a good deal to-day, vomitus containing much blood, which was clotted and of a coffee.ground color. This blood, together with the persistent epigastric pain and anorexia determined the diagnosis, "ulcer of the stomach."

July 7.—Pain and tenderness in right hypochondriac region. Liver noticed to be somewhat enlarged, projecting about 5 cm. below the lower border of ribs.

July 11.—Liver much enlarged and quite hard to touch. Patient has much pain in right hypochondriac region over seat of liver.

Necropsy (*twenty-one hours after death*)—Post-mortem lividity and *rigor mortis* present. General nourishment poor. Pericardial sac contained about 30 c.c. clear serum. Aortic, pulmonary, and tricuspid valves competent. Mitral valve incompetent and thickened at edges. Cavities of heart normal. Wall of left ventricle slightly hypertrophied; wall of right ventricle normal. Weight of heart, 343 grams. Aorta normal. Both pleuræ firmly adherent to lungs over whole surface. Lungs filled with hard nodules, varying in size from the size of a walnut to that of a small orange. These presented the appearance of old and well-organized blood clots, being white in the center, and firm, softer and redder nearer the periphery. Weight, left, 940 grams; right, 1,069 grams. The peritoneum contained blood clot, amounting in weight to 690 grams, and much blood, which was the immediate cause of death The liver was fatty and filled with hard masses, similar to those found in the lungs, one of the masses being the size of a man's two fists. This mass was behind the transverse colon and was pressing it forward. There were also numerous soft hemorrhagic infarctions in the liver. At the site of one of these infarctions in the right lobe the peritoneum and liver tissue covering the infarction had ulcerated, leaving the patent mouths of the vessels of the liver communicating with the peritoneal cavity, which vessels were the source of the hemorrhage into the cavity. Liver grayish in color; weight, 2,930 grams. Gall bladder and ducts distended. On the right side of the brim of the pelvis, just in front of the sacro-iliac joint, was an infarction such as was found in the lungs and liver, about the size of an orange. This infarction was covered by peritoneum and attached to the brim of the pelvis by mesentery. Spleen normal.

CASE 8.

Mitral.—Embolism of the basilar artery.

J. N.; aged 28 years; nativity, Sweden; admitted to the U. S. Marine Hospital, port of Boston, Mass., July 1, 1892; died July 4.

Patient was speechless when admitted, so no previous history of the case could be obtained. He was conscious and could understand questions which were put to him and would reply by motions of his head. Was taken sick two nights before admission; bowels persistently constipated; passes water involuntarily; pupil of right eye dilated. Left eye has been injured; state of pupil on that side not reliable. Pulse slow, breathing somewhat stertorous. Left hemiplegia present.

Necropsy (*eleven hours after death*).—Post-mortem lividity present; *rigor mortis* present; general nourishment good. Pericardial sac normal; ventricles of heart normal in size and thickness; large antemortem clot in right ventricle. Aortic, pulmonary, and tricuspid valves normal. Mitral valve incompetent, with thickening at edges. Two emboli in the basila artery. Blood vessels of brain quite full; no softening.

CASE 9.

Mitral.—General œdema.

C. C.; age, 48 years; nativity, England; was admitted to U. S. Marine Hospital, Chicago, Ill., October 10, 1892; died December 17.

History.—On admission to hospital patient had œdema of lower extremities and genitalia. Also had a mitral regurgitant murmur; heard with considerable distinctness over the apex during cardiac systole. Examination of urine showed no albumen. Patient had had symptoms of secondary syphilis following a sore contracted some years before. He was given iodide of potassium with mercury, also digitalis, and under this treatment he improved. In the latter part of November the quantity of urine passed became much diminished and œdema reappeared. Albumen in urine became considerable, and the quantity of urine passed in twenty-four hours was reduced below 500 c. c. Digitalis, strophanthus, and caffein were tried. Respiration became steadily more embarrassed until death.

Necropsy.—Lividity marked; *rigor mortis* only slight. Heart weighed 750 grams. Pericardial sac full of fluid. Left ventricle dilated and walls hypertrophied, while the mitral valves were incompetent. On both sides of the chest there were numerous tough pleuritic adhesions. The liver weighed 1,700 grams. The kidneys each weighed 250 grams, and in the cortex of the left was a small fibrous growth.

CASE 10.

Mitral.—Embolism; organic stricture urethra.

A. T.; aged 72 years; nativity, Italy; was admitted to the U. S. Marine Hospital, New Orleans, La., December 26, 1892; died January 4, 1893.

History.—No satisfactory account could be had of the case further than that after some weeks' illness hemiplegia had developed suddenly about a week before he was brought to the hospital. Urine dribbles from the urethra constantly. Patient in stupor, left side apparently paralyzed. Diarrhea. On attempting to relieve bladder by catheter, a tight stricture, 2 cm. in length, reinforced by two smaller ones, was found in pendulous portion of urethra, with an enlarged prostate. A supportive and alterative treatment was instituted, and the patient having rallied to some extent divulsion of the strictures was performed, under ether, on December 28. The patient stood the operation well, appeared brighter and stronger, and was much encouraged. A stimulating and supporting treatment was begun; the patient, however, soon began to sink, and finally passed into coma and died.

Necropsy (eleven hours after death).—Body that of a large, well-nourished white man, with large bed-sores on buttocks and shoulder blades. Post-mortem lividity and *rigor mortis* pronounced. Heart softened, fatty; weight, 540 grams. Pericardial sac distended with pale, straw-colored serum. Heart valves normal, except the mitral, which was notably incompetent. Left ventrical hypertrophied. The aorta at its origin had developed an aneurismal pouch. Lungs normal, though congested; weight, left, 717 grams; right, 585 grams. Left pleural cavity obliterated at points. Liver surface roughened on section, showing cirrhosis; color, dark brown; weight, 1,660 grams. Kidneys contracted, nutmeg-like, granular, with fatty margins; weight, left, 262 grams; right, 279 grams. Bladder wall hypertrophied. Urethra showing site of late strictures, of dense tissue. Spleen ruptured on removal; soft and mushy.

CASE 11.

Aortic and mitral.

W. W.; aged 33 years; nativity, West Virginia; admitted to U. S. Marine Hospital, Cincinnati, Ohio, April 3, 1892; died August 7.

History.—During the course of his disease some of the usual symptoms of aortic regurgitation were prominent, as venous pulsation, Corrigan's pulse, œdema of lower extremities, etc. Aneurism was diagnosed but not located.

Necropsy (five hours after death).—General anasarca; all serous cavities containing more or less amber-colored fluid, the pericardial sac having about 60 c. c. Heart pale, and flabby, and much enlarged; apex situated about seventh rib, near axillary line. Right side dilated; ventricle normal length, containing recent and older clots. Tricuspid valves normal, but incompetent for the dilated orifice. Left ventricular walls thickened, cavity dilated, having post-mortem clots. Aortic valves roughened, deformed, and with one semilunar valve torn. Mitral valve incompetent.

Cleared of clots the heart weighed 600 grams. The aorta was expanded into a small saccular dilatation, projecting upward and forward, proximal to the innominate. The walls of the aneurism were denuded of intima in several places; no fibrinous deposits. Both lungs were œdematous and adherent to chest walls in many places. Adhesions were recent and easily broken. A well organized clot about the size of a hen's egg was found in lower right pleural cavity. Liver was nutmeg in color and adherent to diaphragm.

CASE 12.

Aortic and mitral.

J. H.; aged 53 years; nativity, Ireland; admitted to Marine Hospital, Stapleton, Staten Island, November 12, 1892; died November 15.

History.—Patient entered hospital complaining of severe cough, dyspnœa, and palpitation of heart. Expectoration was profuse and at times large quantities of blood were raised. Body was poorly nourished. Legs œdematous, and swollen to nearly twice their normal size. Abdomen distended with fluid. Respiration hurried and labored. Coarse mucous, sonorous, and sibilant rales heard in both lungs. Heart was rapid. Apex beat moved to the left. Carotid arteries pulsate, area of cardiac dullness increased. Murmurs were heard at the aortic and mitral orifices. Patient was unable to lie down. Dyspnœa increased, and death occurred at 1:15 a. m. December 15.

Necropsy (*ten hours after death*).—Pericardial sac contained a large quantity of fluid. Heart was greatly enlarged. The walls were thin. Both sides contained post-mortem clots, and the right ventricle contained an ante-mortem clot of considerable size. Mitral valve thickened and adherent in places to the walls of the ventricle. Posterior segment of aortic valve atheromatous, as was the aorta in some places. Left lung congested at base and œdematous throughout. Right lung adherent from base to apex and deeply congested. Liver tough under the knife and nutmeg in appearance. Right kidney small and indurated. Left had a cavity in its upper half containing 40 c. c. of straw-colored fluid and lined with mucous membrane; lower half presented the same general appearance as right kidney. Bladder contained about 250 c.c. high-colored urine. Peritoneal cavity contained a large quantity of yellow serous fluid.

CASE 13.

Aortic and mitral.

C. O.; aged 47 years; a native of Sweden, was admitted to the U. S. Marine Hospital, St. Louis, Mo., February 14, 1893; died March 8.

History.—Family history could not be ascertained. Several years previous to his admission he had had chronic diarrhea. Nine years ago he had varioloid. He never had had rheumatism. Five weeks previous to his admission he was troubled with dyspnœa. Ten days before admission he noticed that his feet began to swell. Had a slight cough. Area of precordial dullness much enlarged. The heart sounds at the apex were muffled, at the base were heard distinctly and were normal. Had no trouble with micturition. Slept well.

March 3.—Was taken suddenly worse at 10:30 p. m. During the day he complained of pain in his head, for which he was given 1.2 grams of bromide of potash. In the evening he suddenly became unconscious. His face was cyanosed. Pupils of normal size, but did not respond to light. Sensation to pain diminished. Frothy mucus escaped from his mouth. Could not swallow. Respiration stertorous. Cheeks lax, puffing out at each expiration. Moved his body in any direction. He was given sulphate of morphia 0.01, whisky 25 c. c., in 150 c. c. of warm milk by the rectum.

March 4, 1:03 a. m.—I saw him again. His condition was the same as at 10:30 p. m. of the 3d, except that his pupils were contracted and did not react.

March 4, 9 a. m.—Patient more comfortable. His face had a dusky, cyanosed appearance. He had no pain. Had some cough; sputa were tinged with blood. The sputum was raised easily. The pulse was irregular and at times very weak. Twice during the day he became very restless and sulphate of morphia 0.01 was given hypodermically. Milk digested with pancreatin was given every fourth hour.

March 5, 9 a. m.—Patient resting easily. Coughed some and wanted to get up. There was no paralysis. Pupils reacted. Coarse rales over both lungs and dullness over the left lower lobe. Patient taking digested milk 150 c. c. every fourth hour. He also took 1 gram of bromide of potash every fourth hour.

March 6, 9 a. m.—Patient doing well, but has some fever. The temperature rose suddenly to 39.8 in the afternoon. The cough was the most troublesome symptom. He still expectorated some blood. Tongue dry, and patient weak.

March 7, 9 a. m.—The breath was fetid. Patient answered questions intelligently, but was occasionally delirious. Pupils reacted. No paralysis. Respiration shallow. The patient gradually failed and died on the 8th at 2:30 a. m.

Necropsy (twelve hours after death).—Body: Scars on legs and enlarged veins. Postmortem lividity in all dependent parts. Brain: Dura and pia mater adherent along the longitudinal fissure. The veins of the pia mater were distended with blood. A large number of bodies resembling sago extended into the lumen of the longitudinal sinus. Lungs: Right lung in condition of hypostatic pneumonia, more marked in upper lobe. Lung tissue crepitated in every part in front. Weight, 1,170 grams. Left lung had hypostatic pneumonia in both lobes and weighed 1,280 grams. Heart: Aortic valves slightly inefficient. Patches of false membrane on right and left ventricles and on the base of the heart. Calcification of each cusp of aortic valves. Valves not adherent along the border. Pulmonic valves normal. Mitral valves much thickened. Vegetations along the free borders of the mitral valves. Weight of heart, 650 grams. Spleen: Soft and friable; weighed 500 grams. Kidneys: Normal; each weighed 175 grams. Liver: Had a deep cicatrix on upper surface of right lobe; weighed 2,020 grams.

CASE 14.

Aortic and mitral.—Cysts of the kidney.

D. C.; aged 56 years; nativity, Madeira Island; admitted to Marine Hospital, Stapleton, Staten Island, June 22, 1892; died January 13, 1893.

History.—On admission patient stated that he had been coughing for six weeks. He complained of dyspnœa and palpitation of heart. Body was fairly nourished. Chest expansion diminished. Moist rales heard in both lungs. Loud systolic murmur heard at apex of heart. Abdomen and scrotum distended with fluid. Legs were swollen and they pitted on pressure. Urine contained about 5 per cent of albumen. Under treatment the œdema disappeared from the legs, but the ascites was unaffected. October 17, the peritoneal cavity was tapped and about 10,000 c. c. of serous fluid removed. The abdomen did not again become distended enough to cause inconvenience. About this time vitiliginous spots appeared upon the abdomen above the pubes and upon the hands. Cough continued with more or less severity till death. During the last six weeks there was considerable nausea and vomiting. Emaciation was progressive. About five days before death there was an attack of bronchitis, which seemed to hasten the fatal termination.

Necropsy (twenty-four hours after death).—Body emaciated. Many large spots over abdomen and limbs devoid of pigment. Pericardium adherent to heart and great vessels. Aorta was thickened in places. Aortic valve was calcareous. Segments of mitral valve adherent to walls of ventricle. Antemortem clots in right ventricle and pulmonary veins. Right lung œdematous throughout. Left lung adherent to chest wall posteriorly, œdematous, and reduced in size by pleuritic effusion. Surfaces of liver covered with white fibrinous deposits. On section it was tough and was seen to be nutmeg in appearance. Gall-bladder full. Spleen in much the same condition as liver. Kidneys were small. The left was tough and fibrous. The right contained three cystic cavities, which occupied nearly the entire organ. The bladder was normal in appearance and contained a small quantity of urine.

CASE 15.

Aortic and mitral.

R. A.; aged 22 years; nativity, United States; admitted to the marine ward of the Sisters of Charity Hospital, Buffalo, N. Y., on November 3, 1892, with diagnosis of mitral regurgitation and obstruction.

Physical examination showed marked hypertrophy of heart, with apex beat near sixth intercostal space. On auscultation both presystolic and systolic mitral murmurs could be heard. After admission he grew rapidly worse and died on November 16, 1892.

Necropsy (*thirty-three hours after death*).—Only the heart examined. Considerably hypertrophied. Pericardium normal. Pulmonary valves normal. Mitral valves much thickened and incompetent; result of old endocarditis. Mitral opening much stenosed, barely admitting tip of index finger. On auricular side of valve there were two rough warty growths not of recent formation. Although the aortic valves were carefully auscultated during life no murmur could be heard, but at the necropsy marked thickening of the segments was found.

CASE 16.

Aortic and mitral.

H. K.; aged 39 years; nativity, New York; admitted to the U. S. Marine Hospital, Chicago, Ill., December 6, 1892; died January 22, 1893.

History.—This man had been treated at this station a number of times before. He had a weak and dilated heart, with some valvular incompetency, frequently as a result of alcoholic excesses, a "failure of compensation" would occur, resulting in ascites. His admission in December was on account of a repetition of the attack as above described. Notwithstanding active treatment directed toward a reinforcement of the cardiac energy, his ascites became anasarca. So great was the tension in certain parts of the body, particularly in the scrotum, that sloughing took place to the extent of exposing the testicles with only their immediate covering, the tunica vaginalis testis, just before death. There was great dyspnœa and rapid heart failure toward the last. Death took place from heart failure.

Necropsy.—The body nourishment was good, and neither post-mortem lividity nor *rigor mortis* was especially marked. The pupils were equally dilated. Circulatory organs: The heart, after opening, weighed 650 grams. There were pericardial adhesions and the sac was filled with fluid. Both ventricles were dilated and also the right auricle. The valves were incompetent. Lungs: These presented no striking abnormalities except congestion. The left weighed 725 grams, the right 720 grams. Both pleuræ were the seat of extensive adhesions. The liver weighed 2,540 grams, was light in color, and showed increase in connective tissue with slight fatty degeneration. The kidneys were both congested and showed increase of connective tissue. The left weighed 175 grams and the right 180 grams. The spleen weighed 350 grams, was very dark in color, and showed increase in the amount of connective tissue.

CASE 17.

Aortic and mitral.—Chronic interstitial nephritis—Gallstones.

P. W.; aged 71; nativity, Pennsylvania; admitted to U. S. Marine Hospital, Memphis, Tenn., September 2, 1892; died September 2.

History.—Died in the ambulance immediately after reaching hospital.

Necropsy.—Body of an old man, muscular and fairly nourished; *rigor mortis.* Lungs congested. The heart was hypertrophied and its cavities dilated. The mitral and aortic valves were deformed, incompetent, thickened, and covered with vegetations, some of which had undergone calcareous change. The ascending and transverse portions of the aorta were atheromatous and were moderately and uniformly dilated. Kidneys rather small, slightly nodular, and showed fibroid change. The thickened and distended gall bladder contained 500 c. c. of thick, brownish bile and one large, smooth gallstone, oval in shape and weighing 15 grams. There was no obstruction in the cystic ducts and the distention was probably caused by the gallstone acting as a ball valve. Brain not examined; other organs normal.

CASE 18.

Mitral and tricuspid insufficiency.

A. W.; colored; aged 44 years; nativity, Virginia; was admitted to U. S. Marine Hospital, Cincinnati, Ohio, December 22, 1892; died March 20, 1893.

History.—He has had rheumatism for twenty years, at present time affecting the knee joints. There is shortness of breath, cough; the sputum is streaked with blood. Venous pulsation is shown in the neck. The apex beat outside of mammillary line; systolic and diastolic murmurs. He has a rapacious appetite, and the stomach is dilated. The patient became gradually worse, developing great œdema of lower extremities, and suffered from pains in the cardiac and gastric regions.

Necropsy (fourteen hours after death).—On March 21, 1893: Revealed an enormously hypertrophied heart, with incompetency of mitral and tricuspid valves. The left ventricle was very large as regards cavity; the walls were about one inch thick, but showed dilatation. Right ventricle large and dilated; walls very thin; small amounts of serum, above the normal quantity, found in the pleural cavities. The stomach was very much dilated. The liver showed evidence of congestion, possibly passive. Death was evidently due to failure of compensation, which was more speedily brought on by poor nutrition.

CASE 19.

Mitral and tricuspid—Secondary syphilis.

M. C.; age, 36 years; nativity, Ireland; admitted to marine ward, Cleveland City Hospital November 16, 1892; died December 13.

History.—In April, 1891, he was treated at hospital for suppurative inflammation of both middle ears, with perforation. He stated that he had had variola when an infant and an occasional discharge from both ears ever since.

September, 1891.—Complained of cough, a systolic murmur was found, audible at apex of heart and propagated to the left.

September 3, 1892.—Presented himself with a single indurated ulcer of penis (which appeared eight days after exposure), glandular enlargement in both groins, not painful, and a macular eruption covering whole body, except face, hands, and feet. Creamy discharge from both ears. Systolic murmur heard from ensiform cartilage to left axilla. He complained of some dyspnœa.

October 4, 1892.—Readmitted. Ulcer of penis healed. Roseola faint. Several mucous patches in mouth. Dyspnœa quite marked. Heart feeble. Liver extends 5 cm. below ribs in line of nipple. Vomits often. Constipated. It was difficult to keep him in the hospital, and he left again as soon as he felt improved.

November 16, 1892.—Readmitted. Roseola still faintly seen. Ulcers in mouth. Great dyspnœa. Heart feeble, irregular. Blowing murmur pronounced. Second heart sound hardly audible. Apex beat in sixth intercostal space 3.5 cm. to left of nipple. Liver dullness extends in nipple line from sixth intercostal space to 7 cm. below ribs. Œdema of feet. Urine 1020 acid; no albumen; loaded with urates; no casts. Vomits nearly all food.

November 18.—Internal piles, bleeding and painful.

November 21.—Inflammation of lymph vessels for several inches along inner aspect of right leg, just above inner malleolus. Subsided in a week.

November 28.—Dyspnœa increasing. Œdema of feet has become general anasarca.

December 1.—Twenty-four hours' urine, 500. c. c.; 1016, acid; normal color; slight amount of albumen. Orthopnoea. Died December 13. Patient had been a hard drinker for years.

Necropsy (fourteen hours after death.)—Livores and *rigor mortis* present. Pericardial sac contained about 50. c. c. of clear fluid. This sac and the liver were bound closely together. The heart was quite large; a few white patches externally; walls thin; contained fluid blood. Mitral and tricuspid valves were apparently incompetent, but no lesion visible. Thoracic aorta normal. In left pleural cavity there were a few adhesions; in the right, many. Both lungs were of intensely deep-red color, from chronic congestion, and of leathery feeling. About 2,000 c. c. of fluid in abdominal cavity. Mucous surface of stomach congested; intestines normal, pale; liver firmly bound to diaphragm and to omentum. Many small projecting nodules all over surface. Section showed yellowish white masses scattered everywhere. Microscope showed these to be largely fat. Liver weighed about 6,000 grams. Kidneys large, especially the left; congested. Spleen closely attached on all sides; normal size; firm consistency; concretions of lime about hilus and on section.

CASE 20.

Mitral and tricuspid.

G. G.; age, 56 years; nativity, Virginia; admitted to U. S. Marine Hospital, Baltimore, Md., March 24, 1893; died March 31.

Necropsy.—*Rigor mortis* well marked. Body muscular and well rounded. The lungs were intensely congested, resembling first stage of pneumonia. Left lung was adherent to the diaphragm, and there were well-marked pleuritic adhesions on the right side. The cavities of the heart contained ante-mortem clots. Left ventricle hypertrophied. Mitral valves thickened. Tricuspid also thickened, but in less degree. Liver was congested, but otherwise apparently normal.

The kidneys were congested, and the left contained a small spot of calcareous degeneration.

CASE 21.

Aortic, mitral, and tricuspid.

W. B.; age, 42 years; nativity, Nova Scotia; admitted to U. S. Marine Hospital, port of Boston, Mass., April 5, 1893, suffering with heart disease; died April 25.

When admitted he was suffering from dyspnœa and swelling of extremities. Physical examination disclosed murmur at aortic and mitral valves, both during systole and diastole, indicating stenosis with regurgitation. Urine contained no albumen.

Necropsy (seven hours after death).—*Rigor mortis* marked. Post-mortem discolorations on dependent parts of body. Skin on left thigh and leg was split from effusion and pressure. Pleural cavities contained about 1,250 c. c. of fluid. Pleura adherent throughout and thickened. Heart hypertrophied; walls thickened, and its cavities dilated. Aortic valves thickened and incompetent. Arch of aorta contained calcified plates. Mitral valves also thickened, containing vegetations, and incompetent, as was tricuspid. Left lung emphysematous in upper lobe, œdematous in lower; weight, 570 grams. Right lung œdematous; weight, 770 grams. Stomach covered with viscid, sticky mucous, and in a state of chronic catarrhal inflammation. Descending colon formed a loop 6 inches long in pelvis, turned on itself, ascended again, descended, and passed out. Liver reddish and hard; weight, 1,350 grams. Gall bladder distended. Kidneys neither contracted nor granular; still, capsule could not be stripped without tearing organ; line between cortical and medullary substance almost obliterated. Weight of kidneys: Left, 175 grams; right, 140 grams. Bladder distended.

CASE 22.

Aortic, mitral, and tricuspid.

W. O.; age, 40 years; nativity, Australia; admitted to U. S. Marine Hospital at San Francisco, Cal., May 13, 1893; died May 15, at 12:30 a. m.

History.—When admitted he complained of heart disease; said he had been sick six months. He gave a history of slight recurring attacks of rheumatism. On admission he complained of pain over heart, radiating down left arm, dizziness, dyspnœa, and some anasarca; physical examination showed hypertrophy of heart, and aortic and mitral incompetence. On the 14th he felt somewhat better, but succumbed early in the morning of May 15, 1893.

Necropsy (*fifteen hours after death*).—Body of a well-developed and well-nourished man. *Rigor mortis* still present. Very little discoloration. Thorax: Heart was much enlarged and weighed 690 grams. Left auricle dilated. Slight endarteritis and ulceration of the ascending arch of the aorta. Aortic, mitral, and tricuspid valves were found incompetent. Pulmonic valve was competent. Large post-mortem clots in both auricles and ventricles. Lungs: Right weighed 1,070 grams; very œdematous and considerably congested, but without organic disease. Left lung weighed 870 grams, and presented same appearance as the right. Liver, spleen, and kidneys were congested, but were otherwise healthy.

CASE 23.

All valves affected.

E. H.; age 35 years; nativity, Norway; admitted to the U. S. Marine Hospital, Boston, Mass., July 22, 1892; died September 23.

On admission patient complained of great shortness of breath and weakness, growing gradually worse. Had occasional attacks of palpitation of the heart and a sense of oppression in the chest. Had a severe attack of rheumatism six years before admission; had never been entirely well since. On percussion the area of dullness of the heart was found much enlarged. Aortic and mitral murmurs disscovered on auscultation.

Necropsy (*three hours after death*).—Post-mortem lividity present; *rigor morti* marked; general nourishment fair; pupils moderately contracted. All valves of heart incompetent; left ventricle greatly dilated with wall very slightly hypertrophied. Right ventricle greatly distended with black and chicken-fat clots. Wall slightly thickened. Weight, 582 grams. The heart was enormously large, yet the walls of the ventricles were very little hypertrophied. There was very little mitral valve remaining. The pericardial sac contained about a normal amount of fluid. Lungs: Weight right, 737 grams; left, 572 grams. The lungs were not markedly filled with venous blood as might have been expected; in fact, the right lung was almost normal. Marked pleuritic adhesions over almost entire surface of left lung. Slight adhesions at apex of right. Stomach considerably dilated: membrane congested. Liver: Substance looks fatty; venous radicles filled with dark blood; color, dark blue; weight, 1,598 grams. Gall bladder and ducts, normal. Kidneys: Normal in size and appearance; weight left, 150 grams; right, 134 grams. Suprarenal bodies: Weight right, 4 grams; left, 5 grams. Spleen: Weight, 230 grams; substance solid; capsule adherent. Death was undoubtedly due to heart failure from dilatation due to leaky valves.

CASE 24.

All valves affected.

C. J.; age, 29 years; nativity, Germany; admitted to U. S. Marine Hospital, Chicago, Ill., July 14, 1892; died July 30.

History.—Had been ailing for one month before admission with symptoms of heart incompetency. Examination of heart revealed a systolic murmur at apex, and a diastolic murmur over apex and over aortic valves; diastolic murmur heard at pulmonary valves. Treatment consisted in cardiac stimulants, digitalis and cimicifuga. Heart began to fail him suddenly July 28; was at times delirious and again comatose. Died July 30, 1892.

Necropsy.—Height, 247 cm.; circumference at shoulders, 135 cm.; post-mortem lividity; *rigor mortis* absent; general nourishment good; pupils normal. Heart weighed after opening 570 grams; there was dilatation with hypertrophy. Hydraulic test was applied to all the valves and aortic was found incompetent; anterior cusp split and others thickened. Mitral valves were thickened, one cusp being greatly stretched, the other narrow; both valve edges very thin and stretched beyond competence. Pulmonary incompetent. Tricuspid incompetent, much stretched and edges diseased. Left ventricle dilated, wall thickened; right ventricle dilated, wall hypertrophied. There were firm ante-mortem clots of small size in all the cavities, with extensions through the valvular orifices. The cavities were mainly full of dark fluid blood and soft coagula. Pulmonary artery was distended. Nares normal; larynx and trachea normal; left lung normal; adhesions universal, but slight; superficial cicatrix in apex of left lung; weight of right lung normal; some slight pleural adhesions. There was emphysema of right upper lobe—interlobular. Nothing unusual as to bowels; peritoneum normal; small intestines appeared normal. Liver weighed 1,780 grams; was dark in color and mottled with patches of fatty degeneration; gall bladder and ducts distended with inspissated, very viscid bile. Left kidney weighed 280 grams, congested; right 240 grams, less congested; bladder empty and contracted. Spleen weighed 470 grams, congested. Other organs not examined. Death due primarily to cardiac valvular disease—immediately to failure of heart muscle in diastole. It is not easy to account for the total absence of congestion of lungs while all other organs were chronically congested. There is scarcely less difficulty in arriving at the determining cause of death, in view of the conditions found, unless the ante-mortem clots described may be supposed to have caused greatly increased obstruction at the valves.

PERICARDITIS.

CASE I.

Purulent effusion.

S. W.; colored; aged 29 years; nativity, Ohio; was admitted to the U. S. Marine Hospital, Cincinnati, Ohio, February 16, 1893, and dismissed, after treatment, improved; readmitted April 20, 1893; died April 25.

History.—Of syphilis; suppurating lymph glands of neck and groin; several glands were excised. Readmitted for same disease with the addition of eye trouble; redness, photophobia, etc. One of the glands of the neck was aspirated and injected with 10 per cent solution of iodoform. In one or two days the patient developed fever, pain in right side, jerky and difficult respiration, and great distress; disturbed heart's action and sounds. The right hand and arm became cold, from an embolus probably. There was an apparent difference in the pulses of the two sides.

Necropsy.—Heart weighed 372 grams; pericardial sac was inflamed and contained pus; all cavities of heart, except right auricle, contained ante-mortem fibrin clots. Lungs were about normal. The pleural cavities had old adhesions; both kidneys gave evidence of inflammation.

CASE II.

Effusion.

J. R.; colored; aged 19 years; nativity, Ohio; was admitted to the U. S. Marine Hospital Cincinnati, Ohio, on the 6th day of April, 1893; died April 12

History.—The patient came in hospital on April 6, and on examination was found to have gonorrhea; subsequently developed phimosis and purulent conjunctivitis.

On the second or third day he complained of severe pain in the chest, and it was thought to be beginning pneumonia with accompanying pleurisy and effusion.

Necropsy (*held on April 13, 1893*).—*Rigor mortis* well marked; general nourishment good. Heart weighed 400 grams and was congested. The pericardial sac contained a quantity of sero-fibrinous fluid, the fibrin especially abundant. The pericardium itself was much congested. All the cardiac valves seemed to be competent. Lungs: Left, normal; weight, 558 grams. The right showed much congestion and infiltration. It weighed 1 kilogram. The right pleural cavity was obliterated by adhesions. Liver, dark in color; weight, 2½ kilograms. Kidneys: Left, weighed 232 grams; right, weighed 186 grams; slightly congested, but otherwise normal.

CASE III.

Sero-purulent effusion.

D. D.; colored; aged 24 years; admitted to the U. S. Marine Hospital, Cincinnati, May 24, 1893; died May 31.

History.—When admitted complained of pain in left side, cough, diarrhea, headache, and was very sick. On examination there was evidence of double pneumonia. He rapidly grew worse and died on May 31, 1893.

Necropsy.—Well marked *rigor mortis* and good general nourishment. Heart weighed 464 grams; sero-purulent fluid in pericardium, about 50 c. c., while the surfaces of the sack were covered with fibrin. All the cavities of the heart were filled with fibrinous clots extending into the vessels. They were of ante-mortem formation. The lungs were thick and hard, and did not collapse on opening the chest; the posterior borders of both were adherent firmly to the pleural wall. The liver, spleen, and pancreas were firm, hardened, and enlarged, the liver showing yellowish spots. These organs were firmly united to the adjacent viscera by many firm adhesions.

PERICARDITIS AND PLEURITIS.

Effusion.

W. W.; negro; age, 27 years; nativity, Tennessee; admitted to the U. S. Marine Hospital, Evansville, Ind., March 18, 1893; died June 5.

History.—He was transferred from Nashville, Tenn., where he had been admitted for acute Bright's disease, followed by complication of pericarditis with effusion. Paracentesis pericardii was performed, giving temporary relief, but fluid reaccumulating, the operation was repeated. His abdomen became distended and breathing became difficult, and interstitial œdema gradually increased. Legs became enormously swollen. Œdema of penis and scrotum next occurred. A trocar was introduced into the scrotum and 5,000 c. c. of fluid were removed, but the œdema rapidly reappeared and continued until death. He died suddenly while attempting to take a drink of water.

Necropsy (*six hours after death*).—General nourishment very poor; *rigor mortis* occurred four hours after death; pupils partly dilated; bedsores on back; the whole lower surface of the scrotum was abraded. Pleural cavities were half filled with fluid; strong adhesions were found between thoracic walls and lungs. Lungs were in a hyperæmic condition, especially the lower lobes. Pericardial sac: Inflammation involved both layers of the pericardium, which were adherent and coated with a thick layer of lymph. The sac was extremely large, weighing 500 grams; it extended several inches to the right, displacing the inferior lobe of the right lung and having strong adhesions to the lung and diaphragm. On left side the inferior lobe of left lung was displaced upward, by extension of pericardial sac. The adhesions to the lung, diaphragm, and thoracic wall were so strong that they had to be cut. Heart very much enlarged, covered externally with layers of firm lymph. Left ventricle was very much enlarged, and the wall was about 4 cm. thick. Valves were normal. Abdomen distended by a general interstitial œdema; peritoneum contained only a small quantity of serous fluid. Liver enlarged and weighed 1,900 grams; hard, dark in color, and adherent to diaphragm, intestine, and kidney. Gall bladder and ducts distended with bile. Kidneys were enlarged and in a degenerated, soft, condition. Malpighian pyramids showed evidences of an attack of acute nephritis.

ANEURISM OF THE ARCH OF THE AORTA.

CASE 1.

H. W. H.; age, 45 years; nativity, Massachusetts; admitted to U. S. Marine Hospital, port of Boston, Mass., March 1, 1893. At the time complained of pain in the precordial region, dyspnœa, anorexia, and insomnia. The lower extremities were somewhat œdematous. Later suffered from anasarca. Died May 19, 1893, at 5 a. m.

Necropsy (*six hours after death*).—Body that of a large, well-developed, muscular, white male. Pupils dilated; no foreign body about mouth or nose except bloody froth which had exuded from the latter; chest full; adbomen distended; *rigor mortis;* post-mortem discoloration on all dependent parts of body. Death from suffocation caused by rupture of aneurismal sac at arch of aorta, and pulmonary œdema. Brain not examined. Thorax an abdomen: Arch of diaphragm depressed to between fifth and sixth ribs; cavity of thorax contained large quantity of dark blood with many clots. Both pleuræ free from adhesions; cavity contained bloody fluid, 300 c. c. Heart empty; weight of heart, 500 grams. Mitral and tricuspid walls thickened and contents dilated. Valves both incompetent, as were pulmonary and aortic, the latter atheromatous, the interior of artery presenting same condition; at arch of aorta sacculated aneurism which would contain about 150 or 200 c. c. fluid when full; this sac was thinned in various places and had ruptured at one of these, tearing a rent about 1½ cm. in length near point of exit of left carotid and subclavian arteries. Pericardial sac contained 200 c. c. of fluid. Both lungs œdematous. Inferior posterior portion of inferior lobe of both lungs contained areas of pneumonic consolidation; weight of right lung, 510 grams; weight of left lung, 480 grams. Abdomen contained 3,000 c. c. serous fluid; peritoneum and gastrointestinal tract normal. Mucous membrane of stomach congested and covered with sticky mucus. Liver: Characteristic cirrhotic or nutmeg liver; weight, 1,925 grams; gall bladder distended. Kidneys: Substance hard, capsule easily peeled, relations of cortical and medullary substances normal; pelvis of right kidney slightly dilated. Weight of kidneys: Left, 210; right, 157 grams. Urinary bladder full. Spleen: Cirrhotic; weight, 220 grams.

CASE 2.

J. E.; age, 39 years; nativity England; admitted to U S. Marine Hospital at San Francisco, Cal., September 26, 1892; died April 6, 1893.

History.—When admitted he complained of dyspnœa on exertion, considerable cough, but no expectoration. There was no emaciation. He had occasional night sweats. Stridulous inspiration. Fistula of sternum. Physical signs: Inspection, depression over both apices. Expansion of right lung on inspiration very slight; exaggerated expansion of left side. Percussion, dullness over right apex. Auscultation: Dry rales, tubular respiration over upper lobe of right lung. A diagnosis of chronic pneumonic phthisis was made.

On the morning of April 1, patient was seized with severe pain in chest and dyspnœa and became unconscious. Was unconscious for twelve hours. He gradually rallied, but on April 5 he was again seized with paroxysms of pain and dyspnœa. Unconsciousness again occurred, and death supervened at 1:30 a. m., April 6, 1893.

Necropsy.—Thorax: No fluid in either pleural cavity. Right lung: Weight, 980 grams. Many old pleuritic adhesions found. Very little crepitation observed in upper and middle lobe. On section a fibroid phthisical process was observed. Some œdema. Left lung: Weight, 600 grams. No adhesions. Normal crepitation. Lung was healthy, except some œdema and congestion. Heart: Weight, 530 grams; some hypertrophy of left ventricle. Valves competent; ante-mortem clots in left ventricle. Aorta: Large sacculated aneurism of transverse portion of arch; an organized laminated clot occupied a large portion of the sac; some calcification of walls. Liver: Weight, 2,070 grams; appeared normal. Kidneys: Right, weight, 260 grams; left, weight, 240 grams. Somewhat enlarged, but no sign of organic disease present; both were congested. Brain was carefully examined and no pathological condition found, except some passive congestion.

Case 3.

I. H.; aged 30 years; nativity, Alabama; admitted to U. S. Marine Hospital, Mobile, Ala., August 31, 1892; died September 10.

History.—Patient was admitted eleven days prior to death, with malarial fever and occasional paroxysms of coughing, palpitation of heart, and dyspnœa, chiefly at night. These paroxysms were sometimes accompanied by complete coma, lasting from twenty minutes to an hour or more. There was little or no pain, and he died in one of the lethargic attacks.

Necropsy (*twenty hours after death*).—External appearances: *Rigor mortis* slight; body well nourished. Thorax: Heart and pericardium normal. In the transverse portion of the arch of the aorta a small saccular aneurism was found; the size was that of a hen's egg. It pressed on the lower end of the trachea and both bronchi, the superior vena cava and both vagi. The sac was not ruptured, and contained organized clot. The lungs were normal. Other organs not examined.

ANEURISM OF AORTA.

A. M.; age, 56 years; nativity, Virginia; admitted to the U. S. Marine Hospital Baltimore, Md., October 12, 1892; died November 3.

History.—Patient transferred from Norfolk, Va., with diagnosis of asthma and emphysema. On admission, general nourishment good, complained of much shortness of breath. Dyspnœa specially marked on exertion. On auscultation, a systolic murmur, mitral in situation, was discovered. Percussion gave increased area of heart dullness. Auscultation of lungs disclosed some sibilant and sonorous rales specially marked at apices.

Necropsy (fifteen hours after death).—Rigor mortis not marked. Lungs of a gray slate-color and normal in appearance. Pericardial sac normal in appearance and contained 10 or 12 c. c. of clear serum. Heart: Left ventricle considerably thickened, mitral valve had calcareous excrescenses of almost bony hardness on the borders. Liver normal in appearance and somewhat enlarged, extending below line of ribs. Thoracic cavity contained about 2,000 c. c. of straw-colored serum. At the beginning of the transverse portion of the arch of the aorta and involving the innominate artery, a tumor as large as a man's fist was found extending anteriorly, formed of successive layers of fibrin. The upper portion of the sternum was eroded and at one place was perforated by pressure of the tumor on its posterior surface. In the lower portion of the tumor there was a large rent, at the external opening of which several large blood clots were formed.

ANEURISM OF THE THORACIC AORTA.

Case 1.

Dilatation of the throat—Pericarditis.

D. M.; aged 40 years; nativity, New York; admitted to U. S. Marine Hospital, Memphis, Tenn., September 10, 1891; died July 2, 1892.

History.—Patient suffered from pain in right side of chest for two months prior to admission. Had occasional violent paroxysms of pain, requiring large doses of morphia to give relief. These paroxysms were accompanied by dyspnœa and sometimes orthopnœa. There was tenderness over right border of sternum and cartilages of fourth and fifth ribs on right side. Immediately over this area, to the left of the right nipple, there was a slight but distinct pulsation. There was dullness limited to this area. There was decided pulsation of an expansile character at the root of the neck above right sterno-clavicular joint and heaving of the lower part of right chest wall synchronous with heart beat. Area of cardiac dullness normal; percussion normal over entire chest except at point above referred to; respiratory sounds normal. There was a double murmur at base of heart. A loud, whirring murmur was heard with first sound and was propagated downward along sternum; was heard on both sides of sternum, but descended lower on right side; very pronounced over area of dullness and pulsation; not heard at apex. Had acute rheumatism fifteen years ago and syphilis ten years ago; slight inguinal adenitis remaining. Had occasional pain in right side of chest during act of swallowing. Treatment consisted of rest in bed and full doses of potass. iodide; aconite and veratrum were occasionally administered as required. Improvement was promptly manifested by diminution of pulsation, ability to lie down without discomfort, and long intervals of freedom from pain. Pain was sometimes entirely absent for several weeks, and when it occurred was of only moderate severity. In the early part of March, 1892, a systolic murmur appeared at the apex, but gave rise to no symptoms; cardiac dullness increased. June 25 he began to cough violently, and pain and dyspnœa returned and continued with but little intermission until death.

Necropsy.—Rigor mortis; body well nourished. The lungs were normal; recent adhesions had obliterated the pericardial sac. The left ventricle was very much dilated, the wall being very thin, especially at apex; the mitral opening was dilated; the aortic valves were slightly thickened. Springing from the aorta, just above its origin, was a large sacculated aneurism, somewhat larger than an orange, with thick and corrugated walls. The sac was adherent to the edge of the right lung and to the pericardium. Its anterior wall was in relation with the underside of the sternum and the adjacent costal cartilages. The sac wall was very dense and, from its corrugation and duplicatures, seemed to have undergone contraction. It contained a large, decolorized, nonadherent clot. The transverse and descending portions of the aorta were roughened on the inner surface by patches of atheroma, but were not dilated. All other organs normal. Death was due to cardiac dilatation and pericarditis; the aneurism had apparently made some progress toward repair.

CASE 2.

J. H. G.; age, 42 years; nativity, Maryland; admitted to the U. S. Marine Hospital, Baltimore, Md., November 15, 1892; died January 2, 1893.

History.—In September, 1890, while lifting a heavy block on board a vessel he felt something give away suddenly. During February, 1891, he noticed a tumor, about the size of a walnut, at the vertebral border of the scapula, which pulsated synchronously with the heart. This tumor had been gradually increasing in size. On admission a large tumor was found in the upper part of left thorax, posterior aspect, displacing the scapula several inches to the left and backward. He complained of severe pain and shortness of breath; was compelled to lie on his abdomen and take full doses of morphine to get rest. Auscultation: Blowing sound synchronous with heart beat and preceding left radial pulse, which was very weak and soft.

Necropsy (eight hours after death).—Rigor mortis well marked. Pericardium contained about 150 c. c. of bloody serum. Heart normal in size and very fatty. Mitral valve normal. Aortic semilunar valves slightly thickened; aorta atheromatous. Right ventricle contained large antemortem clot. Tricuspid valve slightly thickened. Pulmonary artery normal. Lungs: Right lung, inferior lobe very much congested, with considerable amount of pigmentation; otherwise normal. Left lung reduced to about one-sixth its normal size and adherent to the chest wall; atrophy due to pressure from the tumor. Pleural cavity contained a small quantity of serum The thoracic aorta presented a fusiform aneurism, lined with calcareous deposits. At the junction of the descending portion of the arch with the thoracic aorta was found the neck of a saccular aneurism, occupying nearly the whole of the left side of the thoracic cavity and extending partly into the right side, and had eroded the bodies and arches of the four upper dorsal vertebræ. Several ribs were completely disarticulated from the vertebral attachments. Death due to pressure upon the lungs and spinal cord. Other organs not examined.

ANEURISM OF ABDOMINAL AORTA.

Case 1.

Rupture.

R. M. G.; age, 41 years; nativity, Scotland; admitted to U. S. Marine Hospital at San Francisco, Cal., June 2, and died June 3, 1893, at 2:30 o'clock p. m.

History.—On admission he complained of pain in right breast, right arm, and back, and some pain over heart. He also complained of dyspnœa, cardiac palpitation, and a swelling in epigastrium. The pain in back occurred four years ago. It continued for some time, then abated, and he had no recurrence of pain until twelve days previously to admittance. When pain made its appearance he then noticed the swelling in epigastrium. Three days previously to this he fell off a wharf. In order to get out of the water he had to climb a pile. In doing so he became exhausted and rested on the edge of the pile, the edge of the pile being forcibly pressed against his epigastrium. He had had syphilis eighteen years ago. The physical signs were characteristic of aneurism of the upper portion of the abdominal aorta. Albuminuria was present. Ordered absolute rest and a milk diet. On June 3 the patient got up to evacuate his bowels and fell unconscious. When the medical officer arrived the patient's face was blanched, pulse small and rapid, respiration accelerated and shallow. His pulse progressively weakening, he died at 2:30 o'clock p. m.

Necropsy (*twenty-four hours after death*).—Body of a well-developed, well nourished man. *Rigor mortis* well marked. No excessive discoloration. Heart weighed 370 grams. Ante-mortem clots in both ventricles and right auricle and right internal jugular vein. Aortic and mitral valves were incompetent. No endarteritis of arch of aorta. Lungs: Many recent pleuritic adhesions were encountered at base and posterior surface of right lung. A few adhesions found on posterior surface of left lung. No pleuritic effusion. The lower lobes of both lungs were congested and œdematous. This condition was especially marked in left lung. Abdomen: Many peritoneal adhesions were encountered, binding the intestines together. A considerable quantity of coagulated blood was found behind peritoneum and between layers of mesentery. Coagulated blood entirely surrounded right kidney. On removal of intestines a large aneurism, springing from upper part of abdominal aorta, was found. On removing aneurism the eleventh and twelfth dorsal and first, second, and third lumbar vertebræ were found eroded. A portion of the posterior wall of aneurismal sac was absent, the free edge being adherent to the side of the bodies of the vertebræ. The eroded vertebræ communicated with the interior of the sac. The walls of the sac were very thin, and the interior was filled with a large quantity of laminated fibrin. The blood current had tunneled a channel through the center of the clot. The rupture occurred toward the right iliac region. The sac measured 21 cm. in diameter.

Remark.—The fibrinous layers lining the wall of the aneurism were from 5 to 7 cm. in thickness, and were almost of the toughness of muscle. The aneurism, notwithstanding the history, was evidently of long standing.

CASE 2.

Cancer of the stomach.

T. M., aged 53 years; nativity, Ireland; was admitted to the U. S. Marine Hospital, New Orleans, La., August 11, and died December 9, 1892.

History.—Eight months before admission, while in apparent excellent health, the patient noticed a difficulty of swallowing, which increased until it prevented deglutition of anything but liquids. He had been living on fluid diet for four months. No vomiting. He had lost weight, some 25 kilos, and was tormented by diarrhea. Temperature, 38° C.; pulse, 90; small, slightly dicrotic. Complexion sallow, and giving immediately an idea of cancer. A very careful examination of the abdomen gave the impression of a dilated abdominal aorta, probably a beginning aneurism, though the bruit and pulse signs could not certainly be detected. Considerable congestion of the left lung was found. The treatment consisted of sedatives, tonics, alteratives, and an abundance of nourishment. On August 29, 1893, an elastic œsophageal tube was cautiously passed to the stomach, with so happy effect that the patient was thenceforth able to eat and drink at his pleasure. The symptoms of pyloric cancer becoming obvious, a pill of opium and arsenic was given, greatly conducing to his comfort. The patient failed gradually, dying of asthenia.

Necropsy (*eighteen hours after death*).—Body that of a chronic invalid, white, middle-aged man, much emaciated. Post-mortem lividity and *rigor mortis* well marked. Heart, hypertrophied, weight 299 grams, somewhat fatty, pushed to right of sternum by fluid in left pleural cavity. Pericardial sac almost dry. Both ventricles dilated, walls thinned, thoracic and abdominal aorta dilated and thinned, the walls of the latter pouching, at intervals, throughout. Lungs, left adhering closely to diaphragm; weight, 399 grams; left pleural cavity contained 2,000 cc. of thin sanious pus, evidently from a number of abscesses in inferior lobe of same lung. Right lung, weight, 569 grams; normal. Abdominal contents matted together with old adhesions. Stomach, pyloric end the seat of a large cancerous growth, the adjacent portions of the liver and spleen showing some points of ulceration. Liver, reddish brown; weight, 1,163 grams. Kidneys, waxy; weight, left, 127 grams; right, 162 grams. Spleen, weight, 200 grams.

ANEURISM OF THE OBTURATOR ARTERY.

O. B.; aged 37 years; nativity, North Carolina. Admitted to the marine ward, German Hospital, Philadelphia, Pa., September 21, and died October 21, 1892.

Patient unable to walk. A large tense pyriform swelling was noticed in the left thigh. It was not especially painful on pressure. Patient gave a history of the swelling having crept up the thigh from the knee. A comparative measurement was made between the two limbs on admission, and the sound one measured 46.5 cm., and the affected measured 63.5 cm. On auscultation a very distinct bruit was discernible over the line of the femoral artery. Aneurism was hardly thought of, since the swelling was as much posterior as it was anterior, and there was no diminution in the pulse of the affected limb. The temperature of the part affected was slightly higher than the sound limb. The temperature of the patient reached several times over 39°. Later no improvement was noted, the swelling seemed to increase and pointed over Scarpa's triangle. On October 16 a severe diarrhea set in, but it was readily stopped. It was decided to operate, and so on October 18 the patient was etherized and the leg cleaned and a very small trocar was thrust into the tumor. A small stream of blood gushed out, and it was inferred that the tumor must certainly be an aneurism of the femoral artery. It was then decided to tie the external iliac artery, which was done above Poupart's ligament. After tying the artery it was noticed that the bruit still continued over the tumor. A drainage tube was inserted and the edges sutured and dressed and the patient put to bed.

Previous to the operation the treatment had been morphia, digitalis, and whisky, and after the operation the same line of treatment was carried out, only more active stimulation was used, and to this end champagne, atropine, and strychnine were given, and heat was applied to the affected limb, to which also cotton wool had been applied. A fracture box and suspension apparatus were used. Hypodermoclysis was also resorted to. On October 21 the patient died of asthenia and cerebral anæmia, being unconscious at the end.

Necropsy.—The integument of the thigh was dissected up over the line of the femoral artery and also the muscles, and it was found that the artery and its branches were throughout their course intact. Behind the anterior muscles a huge clot was found, and after careful dissection it was found that the aneurism (for such it was) was of the obturator artery. The clot was about 6,000 c. c. in extent and was laminated on the periphery. Abdomen opened in order to trace out the obturator artery. The head and neck and upper fifth of the femur were found to be considerably necrosed superficially, the periosteum destroyed, and the entire muscular planes were very much dissected up by the clot. No pus was found.

HEMORRHAGE FROM THE LUNGS AND STOMACH.

J. M.; aged 37 years; nativity, Sweden; was admitted to Marine Hospital, Stapleton, Staten Island, N. Y., November 14, died December 4, 1892.

History.—Patient had suffered from dyspnœa for three months; said that he had had previous attacks of asthma, but none of so long duration as the present. There was a dry, harsh cough, with scanty white expectoration. Deglutition of solid food was difficult, because of dyspnœa. Sleep was impossible in the recumbent position. Physical examination showed a fairly nourished body. Lungs: Expansion excellent; bronchial fremitus; slightly increased pulmonary resonance; sonorous and sibilant rales throughout the chest. Heart beating rapidly, but no murmur was discoverable. Neither liver nor spleen showed any enlargement. Patient was placed on a liquid diet, and under treatment so far improved as to sleep in the recumbent posture. Rales continued, and at times blood was expectorated in small quantities. On the morning of December 4, while standing over the sink in the act of bathing, he made an attempt as if to clear his throat and a gush of blood from the mouth and nostrils followed. He sank to the floor and expired within a few minutes. Judging from appearances, about 500 cc. of blood were lost.

Necropsy (*five hours after death*).—Pericardial fluid normal. Posterior segment of the aortic valve was thin and had seven pin-hole perforations close to its border. Heart otherwise normal. On removal of left lung a quantity of blood escaped from the mouth. Upper lobe normal. Lower lobe contained several emphysematous lobules, and section showed it to be filled with blood. The hemorrhage occurred near the center of this lobe. Right lung congested at the base. In the trachea and bronchi was an eruption resembling urticaria. Stomach distended with clotted blood. The walls were thickened, congested, and covered with bloody mucus. Rugæ were like whipcord to the touch, and did not disappear on stretching. Liver apparently normal. Spleen pale and reduced in size. Kidneys normal.

LOBAR PNEUMONIA.

CASE 1.

C. L.; aged 30 years; nativity, Finland; admitted to the marine ward of German Hospital, Philadelphia, Pa., May 1; died May 5, 1893.

History.—Patient complained of having been sick two days. On admission temperature was 40°, pulse 120, and respiration 28. Face was dusky red. He complained of dyspnœa and pain, which was referred to the right hypochondrium. Inspection revealed immobility on the right side. Auscultation revealed friction sounds; also tubular breathing. There was dullness on percussion and absence of fremitus. Rusty-colored sputa was expectorated. On May 2, 500 cc. of blood were drawn from the medio-basilic vein in the left arm. A cotton jacket was applied, stimulants were given—digitalis, whisky, ammon. carb., strychnia; also inhalations of oxygen, but it was evident that treatment was useless, as the whole right lung was consolidated and the heart very weak. Patient developed collateral œdema and died.

Necropsy.—Pneumonic consolidation, of the whole right lung; cheesy in the lower half, red in the upper. There was also a plastic pleurisy of the right lung and an œdematous condition of the left lung. The heart was filled with fibrinous clots, the right side engorged, and the walls very hyperæmic. All other organs were normal.

CASE 2.

P. C.; aged 27 years; nativity, New York; admitted to Marine Hospital, Stapleton, Staten Island, N. Y., October 10; died October 17, 1892.

History.—On admission patient stated that he had been sick one week, and complained of cough, with yellowish expectoration; pain over left lung, aggravated on coughing; dyspnœa and palpitation of the heart. Pulse 120, respiration 30, temperature 39.8° C., chest barrel-shaped, and on inspiration the framework was seen to move upward. Increased vocal fremitus over left lung, diminished over right. Dullness over left lung and increased pulmonary resonance over right. Crepitant rales and bronchial respiration were heard over left side, while over the right the respiratory murmur was feeble. There were also broncho-vesicular respiration and sibilant rales. On the day following admission the sputa became rusty. Patient grew gradually worse; dyspnœa increased; heart became more feeble, and finally failed to respond to stimulation.

Necropsy (ten hours after death).—Body emaciated. *Rigor mortis* marked. Pericardial fluid increased. Left ventricle contained a small ante-mortem clot, which extended 7 cm. into the aorta. Heart valves normal. Surfaces of left pleura agglutinated. Left lung completely solidified, and in a state of gray hepatization. Right somewhat emphysematous, increased in size, congested, and contained patches of red hepatization. Liver enlarged, congested, and evidently in a state of slight fatty degeneration. Spleen and kidneys normal. Other organs not examined.

CASE 3.

J. K.; aged 38 years; nativity New York; admitted to U. S. Marine Hospital, Chicago, Ill., April 18; died April 27, 1893.

History.—This patient was admitted to the hospital, suffering from rheumatism and influenza. Soon afterwards he developed fever, cough, and pain in the right side; examination showed consolidation of the lower lobe of the right lung. He became delirious on the seventh day after admission, and remained so until his death, which occurred two days later.

Necropsy.—The body nourishment was poor, and the *rigor mortis* well marked. Circulatory organs: The heart, after opening, weighed 270 grams; there was no pericardial fluid. The left ventricular wall was comparatively thin, but the valves were competent. The left lung weighed 245 grams, and presented no abnormality, while the right lung weighed 790 grams, and the entire lower lobe was involved in pneumonic consolidation, portions of which were in the stage of red, and others in the stage of gray hepatization. Other organs: The liver was perfectly normal in appearance, and weighed 1,740 grams; the gall bladder was full of bile; the kidneys were normal in appearance, the right weighing 165 grams, and the left 140 grams. Nothing abnormal could be detected in the spleen, which weighed 110 grams.

CASE 4.

L. H.; aged 22 years; nativity, United States; admitted to the Marine Hospital, Memphis, Tenn., December 29, 1892; died January 4, 1893.

History.—The patient had been seized with symptoms of pneumonia a little more than a week previous to his admission to the hospital. There was evidence of consolidation of all the lower portion of the left lung, and symptoms of invasion of the right lung were appearing. The bowels were loose. The temperature at first went down, then rose again, then went down to normal, the patient being very weak and slightly jaundiced. Before death the temperature rose again to 39°.

Necropsy (*five hours after death*).—The body was greatly emaciated. The left lung was pale and œdematous, and was adherent to the parietal pleura from the third rib downward in front and to the pericardium. The adhesions were very firm. The weight of the lung was 830 grams. It was but slightly crepitant, yet did not sink in water. It was consolidated, excepting the apex. The right lung was adherent over a considerable space between the third and sixth ribs. It was pale and œdematous, and collapsed when the chest was opened. Its weight was 305 grams. The weights of other organs were as follows: Heart, 430 grams; liver, 2,030 grams; spleen, 272 grams; left kidney, 160 grams; right kidney, 170 grams.

CASE 5.

J. E.; colored; aged 39 years; nativity, Indiana; admitted to U. S. Marine Hospital, Evansville, Ind., February 6; died February 9, 1893.

History.—On the 2d instant, after exposure to wet and cold, he was taken with a severe chill, pain in right side of chest, and cough. He grew worse daily, and had an exhaustive diarrhea and a very irritable stomach. Temperature on admission, 40° C.; pulse, 110, and very weak; respiration, 40; voice, husky. Physical examination gave dullness on percussion, increased vocal fremitus, and bronchial breathing over the greater portion of the right lung; all signs being more intense at the apex. There was scanty rusty sputum, considerable sweating, and marked depression, and stimulants were required from the moment of admission to the hospital.

Necropsy (*fourteen hours after death*).—*Rigor mortis* marked; general nourishment good. Heart and pericardial sac normal. Right lung in stage of red hepatization, except at the apex, where it was merged into the gray. There were recent pleuritic adhesions about the upper lobe. The left lung was slightly congested, but crepitant; all other viscera normal.

CASE 6.

J. C.; aged 39 years; nativity, Scotland; was admitted to the Marine Hospital, Stapleton, Staten Island, N. Y., August 1; died August 6, 1892.

History.—Gave the usual history of pneumonia; had been sick five days; sickness ushered in by chill, followed by pain in right side, aggravated by cough; physical examination showed pneumonia at base of right lung; the disease was severe from the first, gradually involving the whole lung. Delirium, nausea, vomiting, tympanitis all set in after the third day.

Necropsy (*twenty-four hours after death*).—Body well nourished; hypostatic congestion extreme; well-marked *rigor mortis;* pericardial sac contained the usual amount of fluid; heart muscles flabby; ventricular walls thinned; valves normal. Both lungs adherent to chest walls; the left was shrunken in size and of an intensely dark-red hyperaemic hue. There were about 100 c. c. of fluid in the right plueral cavity, and quite a large patch of pleural exudate along outer border and base of right lung. Upon section the parenchyma was found to be in a complete state of gray hepatization. Intestinal tract filled with gas. Peritoneum appeared healthy. Other organs offered nothing of interest.

CASE 7.

J. H.; aged 62 years; nativity, Germany; was admitted to the U. S. Marine Hospital, New Orleans, La., January 7; died January 18, 1893.

History.—Up to four days previously patient had had uninterrupted good health. He was at that time seized with a stitch in left side, aggravated by coughing and an increasing sense of suffocation. Expectoration viscid and extremely tenacious. No appetite, headache, bowels sluggish, tongue dry. Patient states he has had no fever or chill. This statement is interesting as illustrating the unreliability of a patient's sensations to discern variations in his own temperature, as, at the time ot making the statement, his temperature was 40.6° C. (105 F.); pulse 120, respiration 35, superficial. Heart sounds indicated considerable valvular disturbance, and auscultation also detected congestion in lower lobes of both lungs. Prompt treatment by cotton jacket, stimulating expectorants, stimulants, nourishment, and quinine was instituted. Notable improvement followed for a time, the temperature falling to 36.2° C., with some slowing of the heart and pulse. The relief was only temporary, as the symptoms grew worse, and the patient died of apnœa and exhaustion.

Necropsy (twenty-one hours after death).—Body that of a muscular, fairly-nourished, elderly white man. Post-mortem lividity and *rigor mortis* present. Heart covered with fat; weight, 322 grams; mitral and tricuspid valves markedly incompetent; left ventricle contracted, walls thinned; right ventricle also contracted, but walls notably thickened. Calcareous deposits throughout aorta. Lungs, left: Weight, 680 grams; lower lobe congested; upper lobe in state of gray hepatization and infiltrated with pus. Right: Weight, 1,170 grams; adherent to chest wall and surrounding parts, difficult of removal. Lung throughout honeycombed with abscesses; upper lobe congested; middle and lower lobe in gray hepatization. Both pleural cavities obliterated. Abdominal viscera loaded with fat. Liver soft, friable, fatty; weight, 1,790 grams. Gall bladder and ducts empty. Kidneys softened, infiltrated with fat, capsules detached easily; weight, left, 185 grams; right, 185 grams. Spleen fatty, soft; weight, 255 grams.

CASE 8.

C. P.; age, 37 years; nativity, New York; admitted to Marine Hospital, Stapleton, Staten Island, N. Y., May 1; died May 4, 1893.

History.—Patient states that he caught a severe cold about three weeks ago. Cough followed, which was moist in character. He was taken Sunday, April 23, with a chill, followed by fever; had another chill Wednesday, 26th, also followed by fever. Sputa of a yellow, sometimes purple, color; also very thick. Pain in chest, especially over heart; also pain in abdomen. Can not sleep on account of the pain. Anorexia; dyspnœa on exertion; diarrhea; urine of a dark-red color. Specific, gonorrheal, and alcoholic history. Also has a swelling in his right wrist; hand and wrist very painful. Can not raise hand without assistance. Pain extends as far up as elbow.

Physical examination.—Body poorly nourished. Chest expansion poor; on palpation bronchial and vocal fremitus greatly exaggerated on right side; on percussion only slight variation from normal. Left side decrease of resonance; with exception of apex the left lung is filled with subcrepitant rales. On auscultation pleuritic friction sounds in right mammary region. A few large rales in bronchial tubes. Patient also has an enlarged, inflamed, and painful wrist joint, which is the site of an old Colles's fracture, but owing to the weak condition of patient was not further examined for a new fracture; wrist was put up for the time being in a palmar splint. The morning of May 2, a hot poultice applied to chest over seat of pain; and an oil-silk jacket put on. Temperature of patient evening of 1st, 38° C.; morning of 2d, 39.2° C. Patient went into state of collapse, owing to pain; stimulants administered. Evening of 2d, patient slightly improved. Morning of 3d, patient quite delirious; evening, patient quieter, but quite weak, and almost moribund. Patient continued to grow weaker, and died at 2:20 a. m., May 4, 1893.

Necropsy (seven hours after death).—Body poorly nourished. Post-mortem lividity not well marked. *Rigor mortis* not marked. Pupils normal. Pleural cavity normal. Chest when opened showed the lungs not collapsed. Left lung: Apex emphysematous; lower two-thirds and posterior portion entirely consolidated; gray hepatization. Right lung: Lower two-thirds of upper lobe in state of gray hepatization. Kidney: Capsule easily separated; also congested. Suprarenal capsules indurated. Slight effusion into peritoneal cavity. Heart: Left ventricle filled with dark post-mortem semifluid clot. Pericardial sac contained 50 c. c. of serous effusion.

CASE 9.

A. S.; aged 25 years; nativity, West Indies; admitted to Marine Hospital, Stapleton, Staten Island, N. Y., February 24; died March 4, 1893.

History.—On admission patient stated that three days before he had had a severe chill, followed by fever, pain in left side of chest, and cough with expectoration at times streaked with blood. There were dyspnœa and cardiac palpitation; temperature, 40.4° C.; respiration, 34; pulse, 120; body was well nourished; tongue heavily coated. Over the lower lobe of left lung were increased vocal fremitus, dullness on percussion, bronchial breathing, and increased vocal resonance. Over the right lower lobe were impaired resonance and crepitant rales. Heart apparently normal. Liver and spleen enlarged. Pain in the left side was at times very severe. As the case progressed dyspnœa increased, and on the evening of March 1 the respiration was 68. The pulse was good up to the very last, not exceeding 120. On the morning of March 4 there was mild delirium. A little latter signs of œdema of the lungs appeared, and patient died at 11:20 a. m.

Necropsy (twenty-seven hours after death).—*Rigor mortis* marked; the pericardial fluid was slightly increased; heart was apparently larger than normal; both ventricles contained ante and post mortem clots; the valves were competent; left lung adherent to chest wall from base to apex and completely solidified. At the apex were several tuberculous nodules. The upper lobe was in a state of red hepatization; the lower contained many gray spots. Right pleural cavity was nearly obliterated by adhesions. Upper lobe of right lung was carnified; the lower lobes were œdematous. Liver enlarged, pale, and fatty. The right lobe was greatly thickened antero-posteriorly. Spleen was pale and increased to twice its normal size. Both kidneys were pale, but otherwise normal.

CASE 10.

Heart failure.

J. B.; age, 50 years; nativity, Ireland; admitted to U. S. Marine Hospital at San Francisco, Cal., April 13, 1885, and died June 7, 1893, at 11:15 o'clock a. m.

History.—On admission patient was suffering from osteo-arthritis and chronic ophthalmia. His condition was slowly progressive until April 26, 1893, when he rapidly became worse. At above date his legs became œdematous. This condition was ameliorated by treatment, but on May 26 an acute laryngitis supervened. Patient coughed considerably and suffered from dyspnœa. On June 4, 1893, patient became jaundiced. Urine stained with bile. He now began to decline rapidly, and became weak both in body and mind. Although very weak he persisted in trying to get out of bed, and in one of these attempts he fell back on the bed and expired at 11:15 o'clock a. m.

Necropsy.—Body emaciated, articulations distorted, *rigor mortis* marked, considerable discoloration posteriorly, skin of icteroid hue. Thorax: Many recent pleuritic adhesions on both sides of chest; some old adhesions also; small quantity of fluid in both pleural cavities. Right lung weighed 1,500 grams; lung crepitated, except over lower lobe, where no crepitation could be elicited. On section it presented appearance of a lobar pneumonia in the stage of red hepatization; some congestion and œdema of upper lobes. Left lung weighed 1,250 grams; much congestion and œdema, especially of lower lobe. Larynx was inflamed; some superficial ulceration; considerable muco-pus present. Heart was normal. Liver weighed 1,610 grams; it was cirrhotic; surface nodulated and irregularly contracted; tough and leathery in section; gall bladder was slightly distended; walls were thickened; bile was very viscid. Spleen weighed 670 grams; much congested. Kidneys normal.

CASE 11.

J. E.; age, 22 years; nativity, Norway; admitted to U. S. Marine Hospital, port of Boston, Mass., February 21, at 4 p. m.; died February 22, 1893.

History.—Was sent from vessel in an open boat during a snowstorm and brought to hospital in ambulance shortly after. Respiration rapid and difficult; pulse weak, 120 per minute; temperature $39\frac{3}{5}$ C.; extremities cold, face cyanosed. Physical examination revealed croupus pneumonia with consolidation (gray hepatization) of the left lung. Collateral congestion right lung. Died twenty-one hours after admission.

Necropsy (*twenty hours after death*).—Body that of white male, large, strongly built, muscular. Post-mortem lividity and ecchymoses of upper chest and neck. Face and lips cyanosed. *Rigor mortis* marked. Cicatrix in right inguinal region (groin) about 8 cm. long and 6 cm. wide. Larynx and trachea congested, but very little mucus. Bronchi inflamed, pleuræ acutely inflamed and adherent. Left lung, with exception of small area in lower lobe, completely in stage of gray hepatization; weight, 2,050 grams. Right lung weighed 720 grams, congested and œdematous. Fibrin of the consistence of jelly covered lung. Liver congested, weight, 2,430 grams. Spleen hypertrophied; weight, 435 grams. Heart large; valves normal, except tricuspid, which was inflamed. Ante-mortem clot in both sides; weight of heart after opening, 420 grams. Left kidney weighed 210 grams. Right kidney weighed 225 grams. Typical pneumonic kidney. Other organs normal.

CASE 12.

Bilateral.

J. V. D.; age, 24 years; nativity, Illinois; admitted to marine ward of St. Vincent's Hospital, Portland, Oreg., March 15; died March 19, 1893.

History.—Patient had chills and fever two days before admission; came to hospital at 6 p. m. and the following was noted: Pulse, full and bounding; countenance, flushed and anxious; temperature, 41° C.; skin dry. Was put to bed and given quinia sulph. 0.6 gram, and antipyrine, 0.3 gram.

March 16, a. m.—Resting easier; temperature 40° C.; pulse 98, full; skin moist; slight cough with pain in the side; tongue coated and bowels constipated. Physical examination of the chest shows only harsh bronchial respirations; percussion note clear and respiration normal. Quinia sulph., 0.66 gram, four times daily; also, ol. ricini 25 c. c. and glycerin 5 c. c., to be taken at once, and tinct. iodi. applied over painful side of chest. Diet, milk, beef tea, and broths.

March 17, a. m.—Pain in side not so acute; slight cough; thin frothy mucus and several ounces of blood were discharged; respirations 26 per minute; pulse full, strong in tension, 130 per minute; temperature 39.4° C.; countenance somewhat flushed and skin covered with a warm perspiration. Free movement of the bowels this morning. Medicine continued, with whisky 30 c. c. every four hours. A large mustard poultice was put on the chest and removed when the skin was reddened.

March 18, a. m.—Early this morning, while delirious and during temporary absence of the nurse, patient arose from his bed and jumped out of the window into the yard. He was immediately discovered and returned to bed. He received no injuries save a slight contusion of the back. Expectoration again hemorrhagic and several ounces discharged at one time. Skin relaxed, dusky, and cool. Pulse rapid and irregular in rhythm; temperature, 40.4° C. Palpation, resistance is increased; percussion note flat, with something of the tympanitic quality. Auscultation reveals small crepitant rales over right thorax, below and external to the nipple. Ordered cold sponging and quinia sulph. 1.33 grams every four hours. Also whisky 30 c. c., tinct. digitalis 0.4 cc., and carbon ammon. 0.33 gram, every two hours. Diet to include eggnog.

March 18, p. m.—No change in patient's condition; had free movement of bowels at 2 o'clock.

March 19, a. m.—Patient is excitable, with more or less delirium, and did not sleep last night. Crepitant rales over apices of both lungs, with dullness and consolidation over lower right lobe. Pulse irregular in rhythm, 132 per minute; respiration, 54 per minute. Urine retained and withdrawn by catheter. Chloral hydrate, 1 gram, administered last night and repeated in three hours, did not quiet delirium nor produce sleep. Nails blue and heart action feeble. Continued carbon ammon. 0.66 gram every three hours, also whisky 45 c. c., and tinct. digitalis 0.66 c. c. every two hours, and cold wet pack.

March 19, 2 p. m.—Respiratory acts are more frequent and shallow, reaching 60 per minute. Countenance flushed and dusky. The working of facial muscles and those of the alæ of the nose are expressive of the so-called facies pneumonica. Pulse small, soft, and weak.

March 19, 8 p. m.—Patient became very delirious and it required the combined strength of three persons to retain him in bed. As delirium subsided patient fell back on pillow greatly exhausted. Dyspnœa increased, face cyanosed, breathing quick and shallow with great debility, followed by profound coma and death.

Necropsy (*eighteen hours after death*).—External appearances: Height, 5 feet 9 inches. Circumference at shoulders, 48 inches. Post-mortem lividity marked over back, sides, and hips. *Rigor mortis* marked. General nourishment good. Pupils dilated. Heart: Weight after opening, 380 grams; normal; contained but little blood and a post-mortem clot; pericardical sac and fluid normal. Lungs: Left, weight, 720 grams; the tissue was hyperæmic and the inner margin of the lower lobe was solid and entirely without air; pleural cavity normal. Right lung, weight, 1,400 grams; tissue firm and also friable, most marked in lower and middle lobes, and devoid of air, except at upper and inner margin of the upper lobe; surface of a section had a red and granular appearance, and a tough, grayish-red fluid could be scraped from it; pleura slightly adherent laterally. Liver: Weight 2,400 grams; tissue and color normal. Gall bladder, normal. Kidneys: weight each, 135 grams; normal. Spleen normal.

CASE 13.

Fibroid phthisis.

J. P.; aged 50 years; nativity, Nova Scotia; admitted to the U. S. Marine Hospital, Boston, Mass., September 29; died November 5, 1892.

Patient was admitted for lobar pneumonia. Pain in right side, rusty-colored sputum, bronchial breathing, and dullness on percussion over whole of anterior portion of right lung. Patient did not improve and soon a cavity was discovered in upper lobe.

Necropsy (*fourteen and one-half hours after death*).—Post-mortem lividity slight. *Rigor mortis* marked. General nourishment poor. Pericardial sac normal; contained about 60 c. c. clear serum. All valves of heart competent. Walls and cavities of ventricles normal; weight, 263 grams. Left lung normal in appearance and feel; a few pleuritic adhesions at the apex; weight, 670 grams. Cavity size of a man's fist in the upper lobe of the right lung; one, size of an orange, in the middle lobe; the remaining posterior portion of upper lobes hard and fibrous. Lower lobe nearly normal, slightly congested. Whole lung bound by very firm pleuritic adhesion over entire surface; weight, 1,052 grams. Liver normal; weight, 1,592 grams. Kidneys normal; weight, right, 152 grams; left, 156 grams. Spleen rather soft and lighter in color than normal; weight, 170 grams. Death due to fibroid phthisis following pneumonia.

CASE 14.

Alcoholism.

J. L.; aged 36 years; nativity, New York; admitted to U. S. Marine Hospital, Chicago, Ill., March 10; died March 17, 1893.

History.—This man had been treated at this station some months before for ulcers of the penis. When admitted to hospital on March 10 he was suffering from acute alcoholism. Soon after admission he developed right lobar pneumonia. Notwithstanding treatment he quickly sank, and on the seventh day after admission died.

Necropsy.—The *rigor mortis* and post-mortem lividity were marked. The general nourishment was good. Circulatory organs: The pericardial sac was thickened;

the heart was of normal size, while the cavities were filled with black, semisolid clots; there was no valvular incompetency. Lungs: The left lung weighed 680 grams; the right lung weighed 1,880 grams, and the lower lobe was the seat of pneumonic consolidation. The liver weighed 2,810 grams, and was of normal appearance. Other viscera normal.

CASE 15.

F. V.; aged 26 years; nativity, Spain; admitted to the marine, ward St. Mary's Infirmary, Galveston, Tex., December 8; died December 13, 1892.

History.—The patient when admitted to the hospital was suffering from a severe attack of bronchitis invading the small tubes, together with pleurisy on both sides of the chest. He had been sick four or five days. The second night after his admission he escaped from the nurse and left the hospital while delirous, and was not found and brought back until ten hours afterwards. He showed remarkable vitality after this exposure, but died three days later.

Necropsy (four hours after death).—Post-mortem lividity existed about the hands. *Rigor mortis* was strongly marked The general nourishment was good. The heart was hypertrophied, particularly the left ventricle. There was little blood in the heart, the cavities being in a state of partial contraction. All the valves were competent. There was evidence of inflammation in the visceral pericardium; the membrane was injected and was marked with curious lines of recent exudation along the course of some of the cardiac vessels. The left lung was partially consolidated in the lower and external portions, the area of consolidation not being clearly defined. Considerable recent fibrinous exudate was attached to the pleural surface of this lung. The surface of the right lung was largely covered with a thick, yellow, fibrinous exudate of recent formation. The lung was nearly completely solidified, with the exception of a small area at the apex. It, nevertheless, floated in water, and the degree of solidification varied, though lobules were not definable. Those portions of the lungs which were not solidified showed congestion. The liver was normal. The kidneys were normal in appearance. Other organs not examined.

CASE 16.

W. S.; aged 25 years; nativity, United States; admitted to the Marine Hospital, Memphis, Tenn., February 9; died February 11, 1893.

History.—The patient had fallen into the water four days previous to admission and gave a history of sickness dating from that time. He was suffering from pains in the chest. Respiration was hurried, the pulse rapid and weak. There were pleuritic friction murmurs on both sides of the chest, bronchitis, and slight dullness at the lower portion of the right lung. The patient was delirious to the time of death.

Necropsy (period after death not noted).—All the organs except the lungs were normal. Both lungs were adherent to the chest walls, the adhesions being of recent formation. Both lungs showed typical lesions of catarrhal pneumonia. Numerous areas of consolidation were mingled with areas of aerated tissue. So many lobules of the left upper lobe were affected as to resemble lobar pneumonia. The bronchial tubes were full of pus, and the minutest bronchi could be detected by drops of pus oozing from them on pressure.

CASE 17.

Tuberculosis.

R. K.; aged 21 years; nativity, Mississippi; was admitted to the U. S. Marine Hospital, New Orleans, La., February 27, and died February 28, 1893.

History.—The patient had been under treatment at this hospital several times shortly before his last admission for tubercle of the lung, malarial fever, and rheumatism. While under treatment for the last named, pneumonia suddenly developed, and although the temperature showed a moderate increase only (to 38° C.), the pulse and respiration were largely augmented to 144 and 40 per minute, respectively.

Auscultation revealed serious involvement of the entire lung substance. The patient failed rapidly and died in forty-eight hours.

Necropsy (*thirteen hours after death*).—Body that of a fairly nourished, muscular, intensely black, young, negro man. *Rigor mortis* marked. Heart: Weight, 295 grams; normal, except some calcareous deposit on tricuspid valve. The pericardial sac gave evidence of not very distant pericarditis. The lumen of the aorta was unusually small. Lungs throughout congested and studded with miliary tubercles; right lung honeycombed with pus-laden cavities; weight, left, 445 grams; right, 670 grams. Left pleural cavity normal; right, almost obliterated by old and very firm adhesions of lung to chest wall, which were bathed in fetid pus. Liver swollen; capsule detached, amyloid degeneration, surface smooth and glistening; weight, 2,520 grams. Kidneys: Weight, each, 215 grams; capsules loose, friable, and advanced in amyloid degeneration. Spleen pale externally, deeply congested and firm on section internally; weight, 420 grams.

CASE 18.

Pericarditis.

E. M.; aged 43 years; nativity, New York; was admitted to the Marine Hospital, Stapleton, Staten Island, N. Y., December 1; died December 2, 1892.

History.—Patient had a chill ten days before admission, followed by fever, and a cough, which caused severe pain over lower portion of right lung. For five days the sputa had contained blood in variable quantities. Great prostration. Headache. Anorexia. Bowels open. Examination showed the pulse 120, respiration 36, temperature 38.8° C. Body poorly nourished. Slight lividity of the prolabia. Tongue coated. Respiration hurried and labored. Increased vocal fremitus, dullness on percussion, bronchial breathing, and friction sounds over lower lobe of right lung. At 9:30 p. m., December 2, patient asked for a drink of milk, which was given him. A moment later the nurse, hearing a peculiar noise, hastened to the bed and found that patient had vomited the milk, together with a considerable quantity of mucus. He was dead before the nurse reached him.

Necropsy (*sixteen hours after death*).—*Rigor mortis* marked. On opening the thorax a circumscribed collection of pus 4 cm. in diameter was found in the anterior mediastinum. The visceral and parietal layers of the pericardium were each 2 mm. in thickness, and studded with prolongations of fibrous tissue, giving them a bearded appearance. The pericardial fluid was increased in quantity and purulent. Pulmonary vein contained ante and postmortem clots 12 cm. in length. Segments of the aortic valve were atheromatous and adherent to the walls of aorta. The mitral valve had several vegetations. Tricuspid valve was much thickened. Pleural adhesions over lower lobe of right lung. Parts of the pleura were dry and glistening, while in spots there were thick fibrinous exudates. Circumscribed pleuritis about 5 cm. in diameter at base of left lung. Right lung: Upper lobe congested and œdematous, lower lobe in a state of gray hepatization. Left lung congested and œdematous throughout. Liver was cirrhotic, tough under the knife, somewhat enlarged, and pale. Gall bladder distended. Spleen pale. Kidneys apparently normal.

GANGRENE OF THE LUNG.

D. V.; aged 35 years; nationality, Scotch; admitted to marine ward of German Hospital in Philadelphia, Pa., December 31, 1892; died January 13, 1893.

Family history good. Complained of having been sick throughout the last trip. On admission attention was drawn to the stomach as the seat of trouble on account of the incessant vomiting, which produced great weakness and emaciation from the first. He was given nutritious enemas and concentrated nourishment by the mouth. Cardiac stimulants and champagne were administered, also small doses of calomel and opium. Patient was slightly jaundiced and complained of great pain just above the liver, and on examination a small dull area was noted. Material vomited was frothy and contained blood. Patient died, and a post-mortem examination being made it was found that the lower lobe of the right lung was gangrenous and that a large abscess cavity communicating with the pleural cavity had formed. The pleural cavity was filled with blood. The left lung was œdematous. The heart was normal, also the stomach, kidneys, and liver. The brain was anæmic.

ACUTE PLEURISY.

CASE 1.

Bilateral.

W. G.; aged 35; nativity, W. S.; admitted to the marine ward of the German Hospital, Philadelphia, Pa., March 28; died March 31, 1893.

Patient gave history of having been sick for three days, the first symptom being great pain in the chest. On admission patient complained of great pain in the chest, difficult breathing, and loss of sleep. There was also pain in the abdomen and tympanitus, which hindered respiration. Physical examination revealed a pleurisy of the lower part of both lungs. Death was sudden.

Necropsy showed a bilateral pleurisy. On the surface of both pleuræ were found numerous cheesy foci, which had broken down, while the substance of the lungs showed no evidence of tubercular change. The heart was filled with hard and soft clots. The stomach was normal, and there was a localized diaphragmatic peritonitis. Other organs were normal.

CASE 2.

I. M.; age, 45 years; nativity, Ireland; admitted to U. S. Marine Hospital at San Francisco, Cal., March 17; died April 3, 1893.

History.—He complained of urethral stricture. Had been operated on several times. On admission only a No. 6 English sound could be introduced. On March 20 internal urethrotomy was performed, and No. 20 sound passed. No unfavorable symptoms occurred until March 22, when patient had a chill. On March 31 another chill occurred, and pain beneath sternum and dyspnœa appeared. The physical signs of pleurisy were present. Pain and dyspnœa increased daily until April 3, when, at 7:50 a. m., patient suddenly became unconscious and great depression of respiration occurred. Stimulants were freely administered and paracentesis thoracis performed. Patient rapidly sank and died at 10:25 a. m. He was an alcoholic.

Necropsy.—On opening the thorax a moderate quantity of hemorrhagic fluid was encountered in right pleural cavity. Numerous recent pleuritic adhesions on right side. The pleura was covered by a thick fibrinous exudation. The right lung was crepitant; it floated, but was greatly congested. The lung tissue immediately beneath the pleura was noncrepitating. Lung did not seem to be much compressed. Left lung and left pleura were normal. Heart: weight, 340 grams; normal and valves competent. Liver: weight, 2,400 grams; deeply congested; otherwise normal. Kidneys: right, weight, 150 grams; left, 160 grams; were normal. Spleen: weight, 260 grams; was congested, but otherwise healthy. Bladder normal. Urethra was examined, and the incision made by urethrotome found to be granulating. No sign of inflammation or infiltration found. Alimentary canal was found normal. The brain was carefully examined. The pia mater over covexity was opaque and a few adhesions were found between pia mater and arachnoid. These were doubtless due to a former disease. Otherwise the brain was normal.

EMPYEMA OF THE PLEURA.

Pneumonia.

W. P.; age, 38 years; nativity, Illinois; admitted to the U. S. Marine Hospital, Chicago, Ill., February 24; died February 28, 1893.

History.—Was first admitted to the hospital in July, 1890, for a persistent fistula from the chest cavity. He then stated that he had suffered with influenza for six months before admission, complicated by pneumonia, for which he had been treated at the Alexian Brothers' Hospital in this city. A pleuritic abscess which formed had been opened at that hospital and drained, but there was a continual discharge afterwards. Daily flushing with various antiseptic solutions was practiced without avail, and on July 15, 1891, an operation was performed at this hospital, which consisted in a subperiosteal resection of a portion of the sixth, seventh, eighth, and ninth ribs on the same side and a little in front of the fistula. There was no hemorrhage, and the patient reacted well. The good effects of the operation were noticeable, the affected side collapsed, the discharge diminished, and the patient began to improve. The wound closed, but having had a chill on July 8, 1892, a second operation was performed at the site of the old wound. A large-sized drainage tube was kept in position for a week, and the wound irrigated daily with carbolic-acid solution. The case remained about stationary, and the abscess opened into the lung and the patient expectorated large quantities of green, stinking pus. The external wound closed almost completely and, although pus continued to be coughed up occasionally, the man felt comparatively well. The sections of the ribs removed at the point of operation were reproduced by bone.

The patient was readmitted on February 24, 1893, suffering from bronchitis and lobar pneumonia.

Necropsy.—Lividity and *rigor mortis* marked. General nourishment fair. The heart, after opening, presented no evidence of disease. In the anterior mediastinum, under the sternum, were several small pus cavities, probably metastatic. A careful examination showed no track from the pleural cavity. The right lung was pneumonic; the left lung collapsed and bound by adhesions. The pleural cavity about the region of the upper left lobe, was occupied by 500 to 750 grams of cloudy serum and clots of fibro-purulent exudate. The rest of the cavity was entirely obliterated by adhesions. There were general adhesions in the pleural cavity posterior, and about situation of old fistula about 40 cm. of old drainage tube was discovered, surrounded by a small amount of very offensive pus. This tube was smaller than any used at this hospital for such purposes, and had probably been in the situation where it was found nearly three years. The abdomen was filled with gas; the peritoneum appeared normal. The abdominal distension was due to post-mortem changes. The liver appeared congested, but otherwise seemed to be in normal condition; it weighed 2,050 grams. The kidneys were normal; the right one weighed 210 grams; the left, 210 grams. The spleen weighed 140 grams; was dark, congested, very pulpy, and friable. In the lower posterior border of the left axillary region was a fistulous communication with the pleura, opening also through the lung into the bronchi. Death was evidently hastened by the presence of the foreign body, which probably caused a renewed attack of the disease. It is noticeable that the patient apparently recovered and resumed his work on board a merchant vessel as engineer, and served as such several months during the autumn and early winter.

EMPYEMA OF THE RIGHT PLEURA.

Probably from septicemia.

F. S.; aged 31 years; nationality, German; admitted to marine ward of German Hospital, Philadelphia, Pa., January 30; died April 16, 1893. Patient was admitted suffering from a felon on his right middle finger, which was opened and drained. While in the hospital the patient developed pleurisy and became very ill. Temperature rose to 40° C., falling by crisis. The whole right lung seemed to be affected. Physical examination showed dullness on percussion, absence of fremitus; breath sounds, however, were heard all over the affected area. There was much œdema over the thorax. A purulent effusion was suspected and a hypodermic needle was introduced into the pleural cavity, but no pus was found. Patient developed a morning rise of temperature and sweats. He was put on strychnia, digitalis, atropine, and cough mixture, but in spite of treatment he died suddenly.

Necropsy.—Large pus cavity on the right side containing 6,000 cc. of pus on measurement. The right lung was displaced toward the center; the left lung was nearly normal. Heart normal as to its valves, but contained large clots. Liver and spleen were both enlarged and both had undergone amyloid change, as had also the kidneys.

FOLLICULAR TONSILITIS—LARYNGITIS—ŒDEMA OF THE GLOTTIS.

Tuberculosis of the lungs.

S. T.; negro, aged 28 years; nativity, Kentucky; was admitted to the U. S. Marine Hospital, Evansville, Ind., March 28, 1893, at 11 o'clock a. m., and died at 12:30 p. m. on the same day.

History.—Had been under treatment at various times for advanced syphilis and bronchial affections. On March 28, 1893, applied at the city office for treatment; examination showed both tonsils inflamed and moderately enlarged; he was given a card to the hospital, where he arrived at about 11 a. m. Shortly after noon (about 12:20), while in the act of swallowing a dose of medicine, he was suddenly attacked with dyspnœa, and at 12:30, when the medical officer returned from the city office, he was apparently dead; but, in the hope of resuscitation, tracheotomy was quickly done, and artificial respiration practiced until its futility was clearly demonstrated. When the patient was first attacked the interne was called, and first attempted intubation; that failing, he was about to perform tracheotomy when the medical officer arrived.

Necropsy (*six hours after death*).—The larynx presented a condition of general inflammation and extensive œdema. Thorax contained about 500 c. c. of serous fluid. Lungs were highly congested. Left lung: Strong adhesions were found to thoracic walls, to pericardium, and diaphragm; there were two large cavities in the lower lobe, just at lower border, where there were strong adhesions to diaphragm; also some necrosed areas. Right lung: Cavities containing broken-down lung tissue, one in lower and two in upper lobe; also several consolidated and necrosed areas. Heart: Hypertrophy of right side; deficiency of mitral valve. Other organs not examined.

INFLAMMATION OF THE STOMACH AND BOWELS.

J. S.; age, 44 years; nativity, Germany; admitted to U. S. Marine Hospital, Chicago, Ill., September 10; died, September 23, 1892.

History.—Patient suffered from diarrhea for three weeks prior to admission. Discharges chiefly watery, with little tenderness or griping, and occurred twenty to thirty times a day. Stomach irritable, and vomited easily. No fever. Considerable cough, and, on auscultation, blowing sound over apices of lungs. Treatment consisted in rest, milk diet, and efforts to check vomiting and diarrhea. Paregoric and bismuth, emulsion of chloroform, and salol were all tried. The question of dysentery constantly arose, though evidently that was only part of the disease, and the idea of rectal injection and colonic flushing presented itself; but the symptoms were not sufficiently pronounced, it was thought, to justify disturbing an already highly excitable patient in this way. Toward the last crushed ice, with milk and lime water, were alone administered, and turpentine stupes put on abdomen. Patient grew very restless, the vomiting increased, not being ameliorated by anything given. The day before death occurred, the bowels moved but little and vomiting occurred but once.

Necropsy.—Post-mortem lividity and *rigor mortis* marked, and pupils evenly contracted. The heart and lungs were normal. There were some adhesions of the left pleura, particularly about apex of lung. The stomach was somewhat large, and contained some dark fluid, blood, and debris. The rugæ were almost obliterated over two-thirds of the mucous surface, and the epithelium denuded and macerated, with some points of hemorrhage. The small intestine was pale, with the epithelium denuded and macerated, and valvulæ conniventes destroyed in places. Features of dysenteric inflammation marked in cæcum and colon. The liver was mottled, and weighed 1,960 grams. The gall ducts were inflamed, and the cyst filled with inspissated bile. Right kidney weighed 250 grams; the left, 200 grams; in both the characters of the large white nephritic organ was fairly marked. Spleen weighed 300 grams.

COLITIS.

CASE 1.

Seaman P. O'B.; aged 35 years; a native of Ireland; entered the marine ward of the St. Francis Xavier Infirmary, Charleston, S. C., on July 28, suffering from dysentery; died August 5, 1892.

History.—Tuberculosis absent. Was a deck hand on pilot boat, and had been sick for two weeks. At this time there was much tenesmus and pain, with fifteen or twenty bloody stools per diem. The stools were at first simply those of dysentery, but for several days he had lost large quantities of blood. Face pale; radial pulse, lacking in tension, yet full and comparatively strong; heart sounds clear. Temperature, 35.6° C. Effort was directed to the stoppage of blood, and ergotin given hypodermatically, hot applications to surface, with pill of lead and opium internally. Symptoms responded readily to these remedies during the first days of treatment, but on August 1 the bleeding again started. Careful examination of mucus masses from the stools failed to reveal any possible amœbæ as the cause, and no treatment was directed to that possibility. Hot and cold enteroclysm was resorted to, with but little result; the bleeding continued, and death ensued.

Necropsy (*seven hours after death*).—Body of adult male, 155 cm. high; 78 cm. about shoulders; slight lividity; marked rigidity; pupils normal. Abdomen opened and the intestine removed. No evidence of peritoneal trouble; glands normal; mesenteric vessels congested; intestinal serosa normal. Mucosa of small intestine slightly catarrhal, with patches of glairy lymph. Cæcal mucosa hemorrhagic, extensive extravasations, also in mucosa of appendix, which was patent, and contained only a little food débris; mucosa of the colon was studded with plaques of extravasation, and was greatly congested; the tissue overlying many extravasations was necrotic, giving a membrane-like appearance, which at points had been detached, and left irregular shallow ulcers, exposing the muscularis. At the sigmoid flexure these denudations were very large and frequent, and from the amount of blood present here it was evidently the seat of most of the fatal hemorrhage. As before stated, there were no amœbæ in the colon, nor was the appearance of the lesion in the mucosa that of the condition dependent upon this parasite. It was not follicular nor diphtheretic; there was or had been no exposure to malaria; there were no extravasations upon the mucosæ of small intestine, bladder, ureters, or renal pelvis, nor upon that of the mouth or pharynx or bronchial tubes; only this very general extravasation into the mucosa of colon to indicate a possible purpura.

CASE 2.

P.L.; colored; aged 28 years; a native of Missouri; admitted to the Marine Hospital, St. Louis, Mo., July 13; died July 24, 1892.

Family history.—His father died from inflammation of the bladder. The cause of his mother's death he did not know. He has two brothers living. He did not know the cause of his only sister's death.

Personal history.—Always well till he was 22 years old. He had malarial fever six years ago, gonorrhea three years ago, an ulcer on his penis three and one-half years ago. He had no eruption on his body after he had the ulcer. Two weeks ago he began to feel stupid, and his bowels moved frequently. He suffered no pain except at stool. He said he had a chill every afternoon. His chills were cured by quinine, but nothing seemed to diminish the number of stools. His stools contained much mucus.

Necropsy (*twelve hours after death*).—Weight of heart, 350 grams. Valves efficient. The anterior and posterior pulmonary valves normal. The middle valve has a division showing an attempt to form a fourth valve. Intestines: The walls of the colon were thickened, and its mucous membrane covered with ulcers. Some of the ulcers had sharply defined edges, formed by the muscular coat. There was hardly any mucous membrane in the colon. In many places the mucous and muscular coats had sloughed away, leaving only the thin peritoneal surface.

CASE 3.

Ulceration.

J. McJ.; aged 53 years; nativity, Kentucky; was admitted to the U. S. Marine Hospital, New Orleans, La., March 11; died March 19, 1893.

History.—Patient had frequently been under treatment at this hospital for malarial and liver troubles, and was a prematurely aged and broken-down man, and a chronic alcoholic. For a week before admission he had suffered with dysenteric symptoms, and on admission was in a state of collapse. He rallied somewhat, but persisted in surreptitiously throwing away his medicine, and consequently succumbed to the disease.

Necropsy (*eight hours after death*).—Body that of an old, fairly nourished, white man. *Rigor mortis* marked. Heart: weight, 400 grams, filled with ante-mortem clots. Lungs: weight, left, 620 grams; right, 650 grams; both showing tuberculous deposits. Pleural cavities almost obliterated by old adhesions. Large intestine contained many ulcerations from the hepatic flexure of the colon onward for 12 cm. Liver, apparently normal; weight, 1,650 grams. Both kidneys cirrhotic; weight, left, 130 grams; right, 120 grams. Spleen: weight, 152 grams.

CASE 4.

Ulceration—Pericarditis.

F. B.; aged 31 years; nativity, Germany; was admitted to the U. S. Marine Hospital, New Orleans, La., June 2, 1893; died same day.

History.—Patient had been treated for colitis one month previously at this hospital and improved rapidly. He declared himself well, and requested his discharge after six days' treatment. On the day of his readmission he was brought to the hospital in the ambulance moribund. Treatment was confined to alcohol sponging and tablespoonful doses of brandy and milk, equal parts, every half hour. He died four hours after entrance.

Necropsy (*twelve hours after death*).—Body that of a muscular, well-nourished young white man. *Rigor mortis* present. Heart: weight, 220 grams; covered with semi-organized plastic lymph; pericardial sac inflamed, and covered with lymph; valves competent. Lungs normal; weight, left, 620 grams; right, 820 grams. Pleural cavities obliterated from old pleurisy. Large intestine ulcerated throughout its course. Liver normal; weight, 1,990 grams. Kidneys: weight, 230 grams left; 200 grams right. Spleen: weight, 290 grams.

CASE 5.

Ulcer—Perforation—Peritonitis.

W. R.; aged 26 years; nativity, West Indies; admitted to the marine ward German Hospital, Philadelphia, Pa., May 14; died May 15, 1893.

On admission patient complained of great pain in the abdomen, which, on examination, was found to be very tender and tympanitic. He had moderate fever, a pinched face, rapid, wiry pulse, and some vomiting. Opium was given in large doses, but patient rapidly grew worse, and died the next morning after admission.

Necropsy.—Body was discolored; belly very tympanitic. A large amount of pus exuded from the abdominal incision. The intestines were filled with gas, and there was a large quantity of pus in the peritoneum. A dark spot was noted on the external surface of the transverse colon, and in it a small opening. The gut was examined and a serpiginous ulcer found. The lungs were normal; the spleen enlarged. The heart was normal, but filled with clots.

APPENDICITIS.

Operation—peritonitis.

A. B.; age, 29 years; nativity, California; admitted to marine ward of Providence Hospital, Seattle, Wash., October 19; died December 5, 1892.

Was operated upon on the sixth day of an attack of suppurative appendicitis. The patient died five weeks later, and the necropsy twelve hours after death showed the following conditions: Body of emaciated white male. *Rigor mortis* well marked. The external wound, which was directly over the seat of the appendix, was healed, except at the point of entrance of the drainage tube. The tube passed out at a counter opening above and well around toward the back. The original abscess cavity was completely filled, and the stump from which the appendix was removed was closed, and perfectly healthy in appearance. The peritoneum was slightly thickened. This was more marked on the right side, and especially about the seat of the operation, where adhesions existed. Between the liver and the diaphragm was a large collection of pus, about 12 ounces. This had passed through the diaphragm into the lung, from which it was expectorated in considerable quantities for a week preceding death. The pus was very foul smelling, and was surrounded by a thick pyogenic membrane which covered the posterior two-thirds of the upper surface of the liver and the corresponding lower surface of the diaphragm. The lower part of the right pleural cavity was entirely obliterated by adhesive inflammation. Other than this the pleura was normal. The lungs were normal with the exception of the right base, which was broken down sufficiently to give entrance to the pus as above mentioned. The pericardium and heart were normal. The liver was fatty and a little over size. The spleen was slightly enlarged, but otherwise normal. The kidneys were large, white, and scarred. The pancreas were normal in appearance. The clinical history of the case showed that the pus above the liver had passed up from the wound, but at the post-mortem there was no evidence of pus or pus cavities below the liver, except along the course of the drainage tube.

ORGANIC STRICTURE OF THE ILEUM.

Laparotomy—pneumonia.

C. J.; aged 26 years; nativity, Norway; admitted to the U. S. Marine Hospital, Port Townsend, Wash., November 27, 1892; died June 13, 1893.

History.—The patient was originally admitted for a persistent diarrhea that had bothered him for over a month. There was not any pain or distress other than the frequent stools. His general health was fair, though he had lost some weight. The diarrhea was not considered of a serious nature, and he was given the usual remedies for that trouble. He did not improve and lost flesh rapidly. He gave a history of having a chancre some months before, but at this time there were no signs of syphilitic infection. He was given antisyphilitic treatment, but did not improve under it. The examination of the lungs and the abdomen did not reveal any pathological condition. None of the lymph glands were indurated or enlarged. The antisyphilitic treatment was discontinued for several weeks, and he was placed on a strictly meat diet. He improved for a time. He had been complaining for some time that the bowel contents seemed to stop at one place for a time, and then he felt bloated, until the fecal matter would rush through with such force that he could not control his bowels. After this he would feel better for several hours. A rectal examination was made, but was negative, except that it was found that a bougie could not be passed into the sigmoid flexure. An exploratory laparotomy was determined upon and performed May 31.

Operation: An incision 10 cm. long was made through the belly of the left rectus muscle. The coils of intestines were drawn out and passed back into the cavity as soon as they had been examined. A large annular stricture was found in the ileum. The stricture seemed to almost close the lumen of the gut. An intestinal anastomosis around the stricture was decided upon. The anastomosis was made by means of Murphy's anastomosis buttons. The anastomosis was made about 10 cm. from the stricture on each side. No other stricture was found. It was noted at the time that there were great adhesions in some portions of the peritoneum. The colon was firmly adherent throughout. Lying in the walls of the mesentery near the stricture were several masses the size of hen eggs. These masses were pellucid and resembled jelly. On the evening of the day after the operation there was a slight rise of temperature, but this fell to normal until the fourth day when the temperature went up to 39°. The temperature continued about 38° until the eleventh day when it rose to 39.2°. The lower lobe of the left lung began to consolidate at this time, and he grew rapidly worse and died of pneumonia, fourteen days after the operation.

Necropsy (fourteen hours after death).—The thorax was opened, and the lungs and heart examined. The lower lobe of the left lung was in the stage of gray hepatization. The upper lobe was congested; the right lung normal; the heart was normal. The abdomen was opened and the intestines drawn out, and search made for the anastomosis and the button. The button was found lying free in the colon. The loop, where the anastomosis had been made, was lying adherent in the pelvic cavity, just behind the bladder. The anastomosis was successful. The mesenteric glands were indurated and enlarged; liver and spleen enlarged and congested. The colon was slit open and it was found covered with ulcers, some of which were as large as a silver half dollar. These were typical syphilitic ulcerations. Brain not examined.

STRANGULATED FEMORAL HERNIA.

T. C.; age, 63 years; nativity, Virginia; admitted to the Marine Hospital, Memphis, Tenn., May 21; died May 25, 1893.

History.—The patient gave a history of a week's sickness with pain in the abdomen, nausea and vomiting, and progressive weakness. His abdomen was distended, his pulse weak, and he had slight fever. He appeared to be in a state bordering upon collapse, due to peritonitis. In the left groin was a tumor the size of a goose egg, elastic but not compressible. The tumor was only slightly tender. A diagnosis was made of strangulated incarcerated femoral hernia with peritonitis, but the diagnosis was necessarily uncertain, as the only symptoms were the presence of an incarcerated hernia of long standing, and the evidence of intestinal obstruction. On account of the uncertainty of the diagnosis, and the great weakness of the patient, no operation was attempted. Life lingered remarkably, and for two days before death the patient was almost pulseless.

Necropsy (ten hours after death).—Post-mortem lividity, none. *Rigor mortis,* strongly marked. General nourishment, poor. Pupils, slightly dilated. The heart weighed, after opening, 268 grams. The pericardial sac was normal. The heart itself and the thoracic aorta were normal. The left lung was not removed. It was apparently healthy. The pleural cavity of this side was obliterated by adhesions. The right lung weighed 622 grams. It was normal, as was also its pleural cavity. The peritoneum was free from evidences of inflammation. The small intestine was much distended, and was obstructed about 1 meter from its lower termination by a strangulated femoral hernia of the left side. The strangulated portion was very small and was gangrenous. The immediate cause of death was evidently the intestinal obstruction, as there was no evidence of peritonitis. When the tumor in the groin was examined it was found to be an old incarcerated omental hernia protruding from the saphenous opening and lying upon Poupart's ligament. The omental mass was continuous with the hernial sac and the neck of the sac was grown to the upper and outer borders of the femoral ring. The small strangulated knuckle of intestine was not discovered in this mass by examination from the outside. The liver was normal and weighed 1,382 grams.

ACUTE YELLOW ATROPHY OF THE LIVER.

W. M.; aged 29 years; nativity, Virginia; admitted to the marine ward, St. Vincent Hospital, Norfolk, Va., April 20; died April 28, 1893.

Had symptoms of catarrhal jaundice until the evening of April 23, when he complained of considerable, not violent, headache. The next morning was dull and somnolent, headache became rapidly worse, delirium and sopor alternating, and patient died April 28, 1893. His urine was examined April 24, 1893, and was found albuminous, and contained large quantities of bile pigment. This condition persisted, the albumen increasing up to his death. Only 180 c. c. of urine were obtainable during the last thirty-six hours.

Necropsy (*twelve hours after death*).—Mulatto, medium size, good muscular development and condition; jaundiced very deeply with ecchymoses of skin, and dark fluid exactly like the black vomit of yellow fever escaped from the mouth on turning him over on his face. Brain: Veins of meninges full of blood; tissue everywhere tinged yellow, as is ventricular fluid, which is normal in amount. Brain rather softer than normal. Thorax: Pericardial fluid tinged with blood; normal in amount. Old pleuritic adhesions over both lungs, more marked on the left. Lungs intensely congested, especially in the posterior portions. Heart yellow, soft, and flabby in diastole. Liver very small, less than 1,000 grams (scales not obtainable); part dark and part pale and fatty ("café au lait"); firm but readily torn. Gall bladder empty. Spleen smaller than normal. Stomach contained dark fluid like that from the mouth. Intestines mainly empty, but some black tarry matter in the transverse colon. Kidneys very much swollen, the capsule gaping widely when cut. Bladder almost empty.

CIRRHOSIS OF THE LIVER.

O. McD.; aged 32 years; nativity, Illinois; admitted to the U. S. Marine Hospital Chicago, Ill., October 3, 1892; died January 9, 1893.

History.—When admitted he had a swollen abdomen, the swelling having begun about two months previously, followed later by œdema of the feet. He was a hard drinker, and suffered from constipation. He had a coated tongue and occasional attacks of vomiting. The result of the examination of the urine was negative. There were also no abnormal heart sounds. He became jaundiced while at the hospital. Paracentesis of the abdomen was performed several times, each operation evacuating from 4,000 to 8,000 c. c. of serum. Toward the last, the operation was done every two weeks on account of dyspnœa. Progressive emaciation and anorexia predominated, and his condition was made worse by hemorrhages from the stomach toward the last. He received general supportive treatment.

Necropsy.—General nourishment of body good; pupils normal; no *rigor mortis*; no lividity. The heart, after opening, weighed 310 grams. Pericardium contained a very small amount of fluid and appeared to be in a normal condition. Aortic and mitral valves in good condition. The heart muscle was pale and flabby. The left lung weighed 430 grams; the right, 590 grams. The abdomen was filled with fluid. The liver was enlarged, sclerosed, and had undergone fatty degeneration, being almost white in color. It weighed 1,480 grams. The kidneys were large and anæmic, the left one weighing 210 grams, the right 200 grams. The markings were very distinct. The spleen appeared normal, and weighed 415 grams.

CIRRHOSIS OF THE LIVER AND KIDNEY.

P. S.; aged 60 years; a native of Ireland; admitted to the Marine Hospital, St. Louis, Mo., on April 6, 1892; died July 11.

Personal history.—He has had malarial fever occasionally. When admitted he said he had had a chill every night for ten consecutive nights. He had no fever when admitted. After his chills had been stopped he still complained of shortness of breath and pain in the epigastrium. His appetite was poor. There was some ascites. He had an uncomfortable feeling in the right side. The liver was much enlarged, feeling round and hard at the lower border. He had no cough. His principal difficulty was from dyspnœa. He failed steadily, and died July 11, 1892.

Necropsy (*eight hours after death*).—Legs and feet œdematous. Cicatrix above right clavicle about 12 cm. long, and one over scapula of the same dimensions, caused by a shell at the battle of Shiloh. Lungs: Left lung weighed 570 grams; right, 570 grams; the upper lobes of both lungs in good condition; there were old pleuritic adhesions on both sides; the lower lobes of both lungs were the seat of hypostatic pneumonia; they did not float in water. Spleen: Weight, 285 grams; it was dense and tough. Liver weighed 1,800 grams; Glisson's capsule much thickened, and cut with a creaking sound. Kidneys: Right, normal in size; capsule adherent, and walls of blood vessels thickened; weight, 236 grams; left kidney very small; cortex thin and only one pyramid visible; capsule adherent and much thickened; weight of left kidney, 49 grams. Heart: Pericardium universally adherent and very much thickened; many atheromatous patches in the aorta; the muscular tissue of the right side of the heart had undergone fatty degeneration.

ACUTE PERITONITIS.

G. N.; age, 27 years; nativity, Russia; was admitted to U. S. Marine Hospital at San Francisco February 6, 1893; died February 8.

History.—On morning of day of admission patient fell down the hold of a vessel. His right forearm (both bones) was fractured in middle third. Patient stated that he fell striking on pit of stomach. There was some shock, and he complained of pain in abdomen. On examination there was no excessive tenderness over abdomen, though firm pressure just below sternum elicited pain. Abdomen slightly tympanitic. Had to draw urine with catheter. On the 7th he had some fever and cramps in abdomen. Pulse very weak. Death on morning of February 8.

Necropsy.—Right lung congested. Left lung bound down by pleuritic adhesion. Abdominal cavity contained about 500 c. c. of bloody fluid. Intestines were adherent and covered with purulent exudation.

ACUTE NEPHRITIS.

CASE 1.

R. M.; colored; aged 27 years; admitted to the U. S. Marine Hospital, Cincinnati, Ohio, May 7; died May 9, 1893.

History.—On admission showed some œdema of eyelids and complained of feeling very badly; had considerable dyspnœa; heart's action tumultuous. There was some swelling of legs and face, which came on suddenly; the urine showed a large quantity of albumen. On the evening of the 9th general clonic convulsions came on. He was given 4 grams of magnesium sulphate every hour, as a depletive, but died at 12 o'clock.

Necropsy (*eight hours after death*).—A fair amount of *rigor mortis;* nourishment good; pupils slightly dilated; œdema of feet and legs. The heart weighed 434 grams; some fluid in pericardial sac. Aorta: syphilitic deposits near valve. The lungs about normal in weight; considerable fluid in pleural cavities; kidneys enlarged and inflamed; possibly acute inflammation of parenchyma. Liver and spleen both hard, with scars or contractures showing on their surfaces.

CASE 2.

H. K.; aged 27 years; nativity, Rhode Island; admitted to the U. S. Marine Hospital, New Orleans, La., December 8, and died December 24, 1893.

History.—On admission the patient seemed depressed and hypochondriacal. A dysentery, which yielded readily to treatment, was the apparent occasion of his seeking relief. On December 16 attention was drawn to his urine having suddenly failed in quantity, a microscopical examination detecting a number of tube casts and hyaline cylinders. Although the lesion seemed of no great importance, the patient was in a profound state of melancholy, and, depressed by mental emotions beyond the reach of the materia medica, sank rapidly.

Necropsy (*six hours after death*).—Body that of a slender, fairly nourished young white man. Lividity and *rigor mortis* marked. The kidneys only were examined, they presenting an anæmic appearance externally, with, on section, many points of inflamed tissue.

ACUTE BRIGHT'S DISEASE.

E. B.; age, 19 years; nativity, England; admitted to U. S. Marine Hospital, San Francisco, Cal., November 14, 1892, suffering from acute Bright's disease.

History.—Taken ill at sea about September 1, and went to bed. In about a week general dropsy supervened. According to statement of captain of ship, over thirty convulsions, occurred in one night, about September 15. When admitted he was unconscious, and had general anasarca. He improved somewhat under treatment, became rational, and the secretion of urine was reestablished, but dropsy became worse. Abdominal paracentesis was performed November 27, and 4,500 c. c. fluid drawn off. Temporary relief followed, but in two days abdomen was again full, as well as the right chest. He again became unconscious and delirious, and died at 3:30 a. m. November 30.

Necropsy (*twelve hours after death*).—Abdomen and chest full of fluid. Lungs normal. Heart normal (not enlarged). Liver normal. Spleen normal. Kidneys: right enlarged; cut surface of cortex white. Cortex thickened; minute hemorrhages visible. Capsule nonadherent; weight, 180 grams; left kidney same as right; weight, 175 grams.

ACUTE BRIGHT'S DISEASE—CONGESTION OF LUNGS.

O. M.; aged 39 years; admitted to U. S. Marine Hospital at San Francisco, Cal. June 16, 1893; died June 17, at 12:35 a. m.

History.—On admission he complained of dyspnœa, loss of appetite, headache, pain over kidneys, and suppression of urine. On day preceding admittance he voided a small quantity of highly-colored urine, which burned him on micturition; said he had been sick six days. Legs were œdematous and physical signs of ascites present; deeply pigmented papular eruption on back, which looks specific. He denied syphilis. At 9 o'clock p. m. patient became cyanosed and dyspnœa much aggravated. About 1,000 c. c. of blood were drawn from median cephalic vein and stimulants administered; catheterization was attempted, but bladder was empty; dry cups were applied over kidneys; dyspnœa progressively increased and paracentesis abdominis attempted, but no fluid was withdrawn. As he was being moved by the nurse from chair to bed he expired at 12:35 o'clock a. m.

Necropsy (*thirty-four hours after death*).—*Rigor mortis* marked, face cyanosed, body plethoric, extremities œdematous. Heart: About 50 c. c. of effusion in pericardial sac; heart hypertrophied; ante-mortem clot in arch of aorta; endarteritis of ascending portion of arch; valves of heart competent. Lungs: Both lungs very much congested and somewhat œdematous; small amount of pleuritic effusion. Liver weighed 2,680 grams and was much congested. Spleen was congested. Small amount of fluid in abdominal cavity. Kidneys presented evidences of acute parenchymatous nephritis.

CHRONIC BRIGHT'S DISEASE

CASE 1.

E. B.; aged 40 years; nativity, Sweden; admitted to U. S. Marine Hospital, San Francisco, Cal., September 12, 1892; died September 18.

History.—This man had been admitted to the hospital several times with all of the symptoms of Bright's disease. When admitted on above date he was suffering from dysentery which developed after an attack of cholera morbus. Two days before death uræmic symptoms set in from which he died.

Necropsy.—Heart slightly hypertrophied, otherwise normal; spleen and liver enlarged; lungs normal; kidneys very small. Brain and spinal cord not examined.

CASE 2.

F. H.; aged 39 years; nativity, Finland; admitted to U. S. Marine Hospital, San Francisco, Cal., October 14, 1892, with what was thought to be acute bronchitis. There was no history of previous sickness.

Not improving, an examination of urine was made, and blood and large number of hyaline and granular casts were found. The urine diminished in quantity—not over 200 c.c. being passed in twenty-four hours. Stomach irritable, not retaining food or medicine. This irritability of the stomach was soon controlled, and diuretics, digitalis, and active diaphoretics (hot bath, hot bottles, blankets, etc.), were resorted to, with some effect on kidneys. At one time he seemed somewhat better, but he afterward sank, and died on the morning of October 24, 1892.

Necropsy (fourteen hours after death).—*Rigor mortis* still present to some degree Body thin, but not emaciated. Brain: More than usual amount of post-mortem blood in veins of cortex. Brain somewhat congested. Ventricles contained an excess of fluid. Thorax: Lungs adherent to chest wall, especially at apices. Extensive tuberculosis; with small cavities in right lung; slight involvement of left lung. Heart larger than normal; left ventricle hypertrophied; valves competent; weight, 430 grams. Abdomen: Stomach normal, except congestion at cardiac extremity. Liver normal; weight, 1,785 grams. Spleen normal; weight, 204 grams. Pancreas normal. Kidneys: Suprarenal capsules normal. Right kidney large, congested; blood flowed from cut surface; fatty streaks; cortical substance thickened; capsule slightly adherent; weight, 220 grams. Left kidney same as right; weight, 210 grams. Rest of body not examined. Cause of death, acute exacerbation of chronic Bright's disease. Large white kidney.

CASE 3.

Cyst of the kidney.

D. H. L.; aged 42 years; admitted to U. S. Marine Hospital, port of Boston, Mass., March 4, 1893, suffering from amyloid kidney. Urine contained about 1½ per cent of albumen; extremities very much swollen; dyspnœa decided. Died March 30, 1893, from œdema of lungs and heart failure.

Necropsy (eighteen hours after death).—Body that of large, strongly-built male, well nourished; no cicatrices; *rigor mortis* marked; post-mortem lividity on neck and back. Pleural cavity contained 700 c. c. fluid; pleura not adherent. Heart hypertrophied; weight, 525 grams; mitral valve incompetent; ante-mortem clot filling right side of heart. Both lungs œdematous; weight, left, 585 grams; right, 735 grams. Peritoneum pale. Liver pale and amyloid; weight, 2,180 grams. Gall bladder empty. Right kidney large, pale, capsule easily peeled; a cyst the size of a pea on the outside. Left kidney contained a retention cyst—in fact, the pelvis was so dilated that kidney and cyst were all one. Ureter also dilated to size of little finger for three inches and constricted so as to cut off, almost completely, connection with bladder; the cyst contained 290 c. c. fluid. Kidney and cyst while full weighed 740 grams; when emptied they weighed 215 grams. Cyst about twice the size of a man's fist. Bladder empty.

CASE 4.

Granular kidney.

W. P.; aged 31 years; nativity, North Carolina; admitted to Marine Hospital, port of Boston, Mass., March 17, 1893, suffering from dyspnœa; slight cough; no fever;

pulse moderately full and 80 to the minute. Difficulty in breathing increased; complained of no pain. Died of heart failure at 4 a. m. on March 22, 1893.

Necropsy (*eight hours after death*).—Body of large, strongly-built, muscular male; no cicatrices observable; no post-mortem lividity; only slight *rigor mortis;* lips covered with bloody froth. Thorax: Pleural cavity contained about 1,500 c. c. of serous fluid; pleura not adherent to lungs; pericardial sac contained about 300 c. c. fluid; both lungs œdematous; larynx and trachea coated with sticky mucus; bronchi inflamed. Left lung weighed 585 grams; right lung weighed 652 grams. Heart hypertrophied, its valves normal; right heart contained both ante and post mortem clots extending into arteries; weight of heart, 500 grams. Liver congested and hard; weight of liver, 1,725 grams. Spleen soft and pulpy, its substance easily torn; weight of spleen, 160 grams. Kidneys contracted and granular; capsule could only be stripped off by tearing substance of organ; line between medullary and cortical substance obliterated. A small concretion the size of a pea was embedded in the periphery of left kidney; both kidneys showed lesions found in advanced stage of Bright's disease (granular kidney); weight of left kidney, 55 grams; weight of right kidney, 77 grams.

CASE 5.

Contracted kidney.

J. M.; aged 58 years; nativity, Germany; admitted to U. S. Marine Hospital at San Francisco, April 24, 1893. He was discharged at his own request June 24, 1893; readmitted June 28, 1893, and died June 29, at 2:10 o'clock a. m.

History.—On admittance he complained of asthma, pain in precordium, dyspnœa, and palpitation of heart. Urine increased in amount; appetite poor. Examination of urine showed albumen and tube casts. Physical examination showed hypertrophy of heart. He was treated for chronic Bright's disease, and progressed fairly well under treatment. On June 24, 1893, he asked for his discharge, intending to seek a more favorable climate. On June 28, 1893, he was readmitted. At this time he was cyanosed, and his heart was rapid and weak. There was suppression of urine and general anasarca. His condition rapidly became worse, and in spite of treatment he died on June 29, 1893, at 2:10 o'clock a. m.

Necropsy (*nine hours after death*).—*Rigor mortis* marked; much posterior discoloration; general anasarca present. Thorax: Pericordial effusion present, about 50 c. c. in quantity. Heart weighed 600 grams. Ante-mortem clots both in auricles and ventricles; valves were competent. A small vegetation was present on one of the aortic cusps just below free edge. Pleuritic adhesions present on right side. Both lungs were congested and œdematous. Liver weighed 1,350 grams. It was pale in color and small. It presented the "nutmeg" appearance of chronic, passive congestion. Spleen weighed 220 grams. Kidneys were small and irregularly contracted; capsule adherent; cortical substance diminished. The condition was that of a chronic interstitial nephritis. About 60 c. c. of urine were found in bladder.

CASE 6.

B. B. W.; aged 54 years; nativity, Massachusetts; admitted to the marine ward, German Hospital, Philadelphia, Pa., July 14, 1892, and died August 6.

History.—Patient on admission complained of much pain in the epigastrium; tongue glazed and red, and pica and boulimia were noted. Treatment was directed toward relieving the stomach, but patient began to fail rapidly, and it was noticed that the stomach was not the main seat of trouble. The weather was remarkably hot and close, and the patient's respirations were hurried. Being a very large man he seemed to suffer much from the heat. Respirations becoming shallower, it was found that the heart was becoming embarrassed and that the lungs were filling and becoming œdematous. Wine, atrophia, strychnia, digitalis, and ammonium carbonate were administered, but to no avail. Rusty sputum was expectorated, and slight amount of albumen discovered in urine. Patient finally became delirious and died.

Necropsy.—Body large and very fat. Thorax opened. Fatty infiltration of all the serous membranes noted. Lungs heavy; when put in water sank and then rose again; a thick grumous fluid was exuded therefrom. Epicardium and pericardium very thick with adipose tissue. A heavy comb appearance of the pericardium showed that an old inflammation had once existed there. About 128 c. c. of fluid was found in the sac. Left ventricle much hypertrophied. Kidneys examined; evidences of parenchmatous degeneration noted. Stomach hyperæmic; otherwise normal.

CASE 7.

A. McC.; aged 40 years; nativity, Ireland; admitted to marine ward, St. Francis Xavier's Infirmary, Charleston, S. C., March 1, 1893; died May 28.

History.—On admission patient stated that at times for three years he had had dropsy, and had suffered from dyspnœa on exertion during the entire time. He was, on admittance, suffering from anasarca, dyspnœa, great debility, headache, cough, with profuse expectoration, anorexia, and diarrhœa. On physical examination coarse mucous râles were heard throughout the chest. Apex beat of heart was felt in mammary line, 1 inch below nipple, and a systolic murmur was heard with greatest intensity at the same point. Urine, though passed in considerable quantity, was of low specific gravity and highly albuminous. The case had progressed so far that treatment could be little more than palliative. May 20 about 10,000 c. c. of serous fluid were withdrawn from the abdominal cavity, with the result of relieving the dyspnœa. A few days later he became dull and stupid, passed rapidly into a comatose state, from which he never rallied.

Necropsy (sixteen hours after death).—Body emaciated. Pericardial fluid normal. Heart greatly enlarged, especially the left ventricle. Ante-mortem clots in both sides of heart. The valves were competent, except the mitral. Pleural cavities normal. Both lungs were anthracosed and œdematous throughout. Liver normal in size, pale and fibrous. Spleen was about one-half the normal size, dark-colored and bloodless. Kidneys small and pale. The capsules were firmly adherent, and the cortical portion had undergone fatty degeneration. Bladder contained a small quantity of pale urine. The abdominal cavity was distended with fluid. Other organs not examined.

CASE 8.

Tuberculosis of the lungs.

P. B.; aged 47 years; nativity, Germany; was admitted to the U. S. Marine Hospital, New Orleans, La., February 28, 1893; died April 27.

History.—The patient, a withered, dried-up old man, complained of loss of appetite and a distressing cough, which came on about 2 a. m. daily; difficult expectoration, general failure of physical strength, and emaciation. Auscultation revealed nothing of importance, except some involvement of the mitral valve. Later examinations discovered albumen in the urine of variable quantity, and at times its presence could not be detected by the most delicate chemical tests. The lungs began to give trouble, and although the temperature and pulse were not disturbed materially, vesicular resonance was replaced by broncophony, and extensive lesions became apparent. Treatment was mainly supportive and reconstructive, with palliatives for cough. A troublesome diarrhea materially hastened the end. Urine suppressed last two days.

Necropsy (twelve hours after death).—Body that of a small ($4\frac{1}{2}$ feet), emaciated, old white man. Post-mortem lividity and *rigor mortis* marked. Heart weight, 297 grams, loaded with ante-mortem clots, and the mitral valve almost undiscernible. Upper lobes of both lungs filled with tubercular deposit. Weight: Left, 620 grams; right, 717 grams. Peritoneum congested. Intestines studded with small ulcers, growing more frequent toward the rectal end. Liver pale brown, mottled with yellowish spots, fatty; weight, 1,649 grams. Kidneys cirrhotic; capsules closely adherent. Weight: Left, 132 grams; right, 117 grams. Spleen normal; weight, 215 grams.

CASE 9.

Chronic nephritis.

H. K.; aged 50 years; nativity, Germany; admitted to the U. S. Marine Hospital, Cincinnati, Ohio, on March 25, 1893; died, March 28.

History.—The patient had been noticeably unwell for about two weeks before admission to the hospital. When admitted complained of pain in back, and had much œdema of lower extremities, scrotum, penis, and face. The urine showed a large amount of albumen. He was in the hospital only two days. On the night of the second day he had convulsions, and died a few hours after.

Necropsy (held on March 29, 1893).—General nourishment good. The heart was apparently normal; some effusion in the pericardial sac; effusions also in both pleural cavities and in the abdominal cavity. The kidneys presented evidences of inflammation. They were contracted, and showed increase of connective tissue. The capsules were adherent.

CASE 10.

P. O'B.; aged 35 years; nativity, Ireland; was admitted to the Marine Hospital, Stapleton, Staten Island, November 23, 1892; died December 22.

History.—Patient was admitted for ulcer of the penis and phimosis, from which he recovered. On the morning of December 12 the patient complained of soreness across his abdomen, nausea, and vomiting, and stated that he had not passed any urine since the preceding evening. Patient was catheterized, but there was no urine in the bladder. The nausea continued. Infusion of digitalis was ordered on the 14th, and on the 15th patient stated he had passed about 30 c. c. of urine. The digitalis was continued. On the 16th patient passed about 200 c. c. of urine. He again passed a considerable quantity of urine on the 17th. His condition continued about the same until the evening of the 21st, when whisky and ammonia were ordered. The patient continued to grow weaker during the night, and died at 9. 36 a. m., December 22, 1892.

Necropsy (twenty-four hours after death).—There was marked post-mortem rigidity and hypostatic congestion. Abdomen was distended from tympanitis of the intestine. The left ventricle of the heart was hypertrophied, and the right ventricle atrophied. The aorta was the seat of calcareous deposits just above the aortic valve. The lungs were deeply congested. The stomach was distended with gas, displacing the liver upward, and that in turn displaced the heart, pushing that organ upward and to the left. The liver was congested and hard, grating under the knife. The spleen was pale and nodular. The kidneys were enlarged and hard, the cortex quite pale, and the bases of the pyramids were congested. The ureters were normal in size, and the bladder contained about 150 c. c. of pale urine.

ORGANIC STRICTURE OF THE URETHRA.

CASE 1.

Chronic cystitis and pyelitis.

D. K.; aged 53 years; nativity, Ireland; was admitted to Marine Hospital, Stapleton, Staten Island, N. Y., February 15, 1893, and died February 20.

History.—Patient stated that he had had a stricture of the urethra for twenty years. He denied ever having had gonorrhea, and stated that the stricture was due to riding in the saddle. His urine can not be passed voluntarily; it dribbles away He has been in this condition for the past eighteen months. He was also troubled. with a slight diarrhea and occasional attacks of vomiting. The evening of the day of admission he complained of sleeplessness, and a sedative mixture was ordered. He gave an alcoholic history, and after the operation was performed on him told the nurse he had been on a long debauch just before admission. On the 17th, after the administration of chloroform, the meatus of the penis was found to be very small, admitting no higher than a No. 8 sound. It was cut and dilated to 40° on the dial of the Otis urethrotome, and a stricture was then found 6 cm. from meatus, which also was dilated to 43° and cut. A second stricture was found 17 cm. from meatus; it was dilated to 40° and cut. Sounds up to No. 19 were passed, and a bandage applied to penis. The hemorrhage was slight. The night of the operation the patient complained of pain. Ten c.c. of the U. S. P. solution of morphia were ordered. The next morning he was better, having slept very well during the night, although the radial pulse was imperceptible. There was hemorrhage from urethra when urinating, patient losing, however, much less blood than the day previous. Whisky, 40 c.c., and aromatic spirits of ammonia, 2 c.c., were administered every three hours. On the morning of the 19th patient seemed better; hiccoughed during the night, but had no hemorrhage. Urine when passed is quite bloody, and smells badly. The whisky was continued. On the 20th the pulse seemed stronger, and could be felt at wrist. The hiccough still continues. Patient passed about 700 c.c. of urine during the night. Morphia sulphate was administered, which relieved his hiccough. Six p. m.: Patient has just passed quite suddenly into a semicomatose state, with pupils very much contracted. Whisky and nux vomica were administered hypodermically, and patient rallied for a short time, during which his bladder was irrigated with a 4 per cent solution of boracic acid. At 8 p. m. he began to sink rapidly, and at 9 p. m. died in a comatose state.

Necropsy (fourteen hours after death).—Body well nourished. *Rigor mortis* well marked. Heart normal; ante-mortem clots in both right and left ventricles. Both lungs œdematous. Small adhesion at apex of right lung. Liver very pale and fatty. Spleen the consistence of a blood clot. Left kidney very large, pale, and pelvis entirely filled with fat. This fat also invaded and had destroyed the inner portion of all the malpighian pyramids. Urethra opened throughout its entire extent. Tissues surrounding the line of incision through strictures appeared healthy. A pocket about 8 cm. from meatus was found which led down into corpus spongiosum. Bladder walls greatly thickened and cavity appears hardly sufficient in size to hold more than 60 c. c. of fluid. Mucous membrane discolored and covered with pus. The cystitis appears to have been of many years' duration. There was a chronic inflammation of the prostate.

Case 2.

R. M.; aged 38 years; nativity, West Indies; admitted to Marine Hospital, Stapleton, Staten Island, September 20, 1892; died September 27.

History.—Patient was brought to the hospital by the captain of the vessel, and upon admission was so weak that it was almost impossible to obtain a history from him. The captain said that the man had been sick for ten days with chills and fever, the chill appearing regularly twice a day. He complained of pain in the back, accompanied by tenderness over the abdomen, and continued to hiccough. Great emaciation; fæces passed involuntarily, and urine dribbled away continually. Pulse, 86; temperature, 36° C; respiration, 23. On introducing a catheter, two strictures of the urethra were found, one just posterior to corona glandis, another in the prostatic portion. The urine, when withdrawn, was decomposed and mixed with blood and pus. Subsequently the bladder was emptied every three hours by means of a catheter, but because of his weakened condition no further operative measures were adopted. He continued to grow worse, and died on date above given. Treatment was mainly stimulative.

Necropsy (seven hours after death).—Body very poorly nourished. *Rigor mortis* well marked. The pericardial fluid was normal, both in quantity and color. The heart and valves normal; an ante-mortem clot was found in the right ventricle. Lungs appeared normal. Liver, pale in color. Spleen, pale in color. Intestines, ileum congested in its lower portion. Bladder very much smaller than normal; walls very much thickened, mucous membrane very much congested and inflamed. Bladder contained about 80 c. c. of urine. Prostate gland was enlarged to twice its normal size. Urethra: Two bands of fibrous tissue were seen just behind corona glandis; also another band about junction of membranous with prostatic portion of deep urethra.

CARIES OF ETHMOID AND SPHENOID BONES.

J. D.; aged 45 years; nativity, Ireland; admitted to the marine ward, St. Vincent's Hospital, Norfolk, Va., March 24, 1893; died May 13.

Had suffered from frontal headaches for sometime before entry (about eighteen weeks) this continued with nocturnal exacerbations, at times very severe, until death. Then supervened diminution, and finally loss of sensation over the two superior divisions of the fifth nerve on the right side, and paralysis of the muscles supplied by the third, fourth, and sixth nerves on the same side. Œdema of the lids, and later, conjunctivitis, with sudden loss of sight in the right eye. The left eye was involved just before death. Just near the close of life his temperature, which had been normal or not over 37.5°, showed the presence of a septic process. Two operations were made through the orbit looking for diseased bone, with little relief. Died in coma.

Necropsy (eight hours after death).—Large, powerful man, somewhat emaciated. Head: Meninges of vertex about normal, as was brain at vertex. At the base the vessels of the pia mater covering the anterior part were distended and showed some escape of blood. Dura mater over the base of the anterior fossa and part of the middle fossa was much thickened—in one place 5 cm. It was tough and vascular, and peeled easily from the bone save over the ethmoid, body of the sphenoid, and small part of the right orbital plate. At these places it was intimately blended with the bone, which was converted into a cheesy substance. It was hard and dense next to the brain (the arachnoid cavity is partly obliterated here) and soft and purulent below. The cavernous and circular sinuses could not be made out, they being replaced by connective tissue and softened material. The cribriform plate of the ethmoid existed only as a cheesy pulp, as also did the body of the sphenoid. The wings of the latter were, even to their extremities, carious and rarefied, but not broken down. The disease was sharply confined to these wings, the bones adjoining being healthy and sound, and save the cribriform plate the ethmoid was sound. Only the head examined.

ARTHRITIS OF THE KNEE.

Lobar pneumonia.

E. M.; aged 44 years; nativity, Sweden; was admitted to U. S. Marine Hospital, Stapleton, Staten Island, March 16, 1893; died March 17.

History.—Patient stated on admission that he had been sick for the past six days; that his sickness commenced with a pain in his back and with chilly sensations. Pain, swelling, and soreness about the knee. Could not walk. Had coughed some. Expectoration scanty, thick, and gray. Anorexia. Bowels loose.

Physical examination.—Body well nourished. Tongue, coated. Lungs, sonorous and sibilant râles in both. Heart sound at apex weak; no murmur detected. Liver and spleen normal. Right knee very tender and painful. Pain in right shoulder and chest, which embarrasses respiration. On the morning of the 17th patient stated that he felt better. That afternoon, about 4 p. m., œdema of the lungs came on, and patient died at 7 p. m., notwithstanding the fact that stimulants were freely administered to him.

Necropsy (*twenty hours after death*).—Body well nourished. *Rigor mortis* well marked. Hypostatic congestion. Right knee swollen. Intestines distended with gas. Right lung adherent to chest wall; very small, and in a state of gray hepatization. Left lung congested throughout lower lobe. Heart large; both ventricles hypertrophied and contain large ante-mortem clots. Liver large and mottled. Upon section it was found to be quite fatty. Spleen appears a little larger than normal. Both kidneys large and pale. Upon opening the knee joint the bursa patella was found distended, with a purulent fluid, and the synovial membrane covered with lymph. The patella on its under surface was found to be denuded beneath this denuded area the bone was necrosed.

MULTIPLE INJURY—SUPPURATION OF THE KNEEJOINT—CALCULI OF KIDNEY, AND URETER—HYDRONEPHROSIS.

J. Q.; aged 48 years; nativity, China; admitted to the U. S. Marine Hospital, port of Boston, Mass., March 25, 1892; died July 25.

Was asleep in his bunk night of March 23, when another Chinaman struck him with a butcher's cleaver. During the struggle which followed, wounds were inflicted as follows: A long incised wound extending between the eyes and down the nose, thence across the right cheek. Incised wound in median line on forehead 3 cm. in length, fracturing the outer table of frontal bone, also the nasal bones. Cut 5 cm. in length over the occiput. Incised wound 6 cm. long, extending to the costal cartilage over the base of the heart. Incised wound on the back of the right arm behind the elbow, and another 5 cm. long about 7 cm. higher. A cut involving the right rectus abdominalis parallel with the transversalis on a level with iliac crest 7 cm. long. Cut 7 cm. long on the outside of the left knee, involving the joint. Patient's whole system saturated with opium. The above wounds had been dressed with plaster, and all except the one on the occiput were suppurating. Wounds on chest, abdomen, and leg were approximated with interrupted sutures, irrigated with H_2O_2, and sublimate dressings applied.

April 4, 1892.—Left kneejoint irrigated and tubes inserted. Refuses any operative interference after the case has been explained. He is very obstinate and troublesome; objects to ordinary dressings and especially to irrigation of knee.

April 20, 1892.—Vomited several times. For several days tubes removed and joint irrigated mornings with warm distilled water; evenings dressings changed, external surface irrigated with H_2O_2. Improved.

April 28, 1892.—Wounds of chest, abdomen, face, arm, and right leg healed.

May 4, 1892.—Wound of skull closed. Left knee still suppurating. Cartilages probably involved. Irrigated with solution of carbolic acid (1–80).

May 8, 1892.—Dressed twice daily as usual.

May 20, 1892.—Counter-opening made on inner side of knee, pus evacuated, and cavity irrigated with H_2O_2. Knee dressed with bichloride gauze.

June and July.—Patient gradually failing and suppuration of kneejoint increasing. Operation refused after case and necessity for operation had been fully explained repeatedly, so that he thoroughly understood. Died July 25, 1892.

Necropsy (*three hours after death*).—*Rigor mortis* absent; general nourishment very poor. All valves of heart competent and walls of ventricles normal. Weight of heart, 205 grams. Pericardial sac contained 15 c. c. clear serum. A few slight pleuritic adhesions at apex of both lungs. A few hard nodules near apex of each lung. Weight of left lung, 255 grams; right, 460 grams. Liver congested; color normal; weight, 950 grams. The left ureter at the point where it crossed the brim of the pelvis contained a calculus which completely stopped the flow of urine through it, causing hydronephrosis of the left kidney. The retention of urine in the kidney had dilated the pelvis of this organ and the kidney substance around it had become very thin. The weight of the calculus was 1 gram. In the pelvis of the right kidney was a calculus which filled the pelvis of this organ, and processes from it entered the infundibula. The weight of this calculus was 14 grams. Weight of left kidney, 120 grams; right, 125 grams. There were no symptoms during life indicating the presence of calculi in the kidney and ureter. He passed a moderate quantity of water, and made no complaints whatever when questioned. Spleen congested; weight, 192 grams. The semilunar fibro-cartilage and crucial ligaments of the left knee were much softened. The articular surface of the left femur and tibia were devoid of their articular cartilages, which left the bone bare and much roughened.

Remark.—The foregoing case is of some considerable interest in view of the medico-legal questions suggested, rather than from any unusual features from a strictly professional standpoint. The legal questions involved relate to the authority of the physician when the patient is too ignorant to decide wisely for himself as to the expediency of an operation. To what extent can the surgeon legally go in enforcing treatment in such cases? The lack of cooperation in this instance was particularly unfortunate, and undoubtedly was a marked factor in preventing a favorable result. It is clearly the duty of the medical officer to study the interests and welfare of his patients, and as a result of that study his care and treatment should be directed and carried out according to his judgment, or his services are of no avail. In this case the subject was a native of China and an American seaman, entitled to admission and treatment in a marine hospital of the United States, to which he was admitted upon application. He was saturated with opium, and was suffering from nine severe wounds on different parts of the body; and notwithstanding his sufferings he stubbornly refused the surgical treatment considered absolutely necessary to save his life. In the interest of humanity he was allowed to remain in hospital after refusing treatment, as he was not in a condition to care for himself outside, and he could only be sent to the almshouse as a last resort. He believed that it was better to die than to lose the use of a limb; and as it is held, I believe, that every sane person has an inherent right to care for his own body as he chooses, provided he is not legally held or under sentence of the law, this man, acting under that right, practically committed suicide in hospital; and he was allowed to do so, although it is a natural, if not a legal, duty to restrain one from ending his life either by violence or otherwise.

BURNS AND SCALDS.

Collective report of thirteen cases.

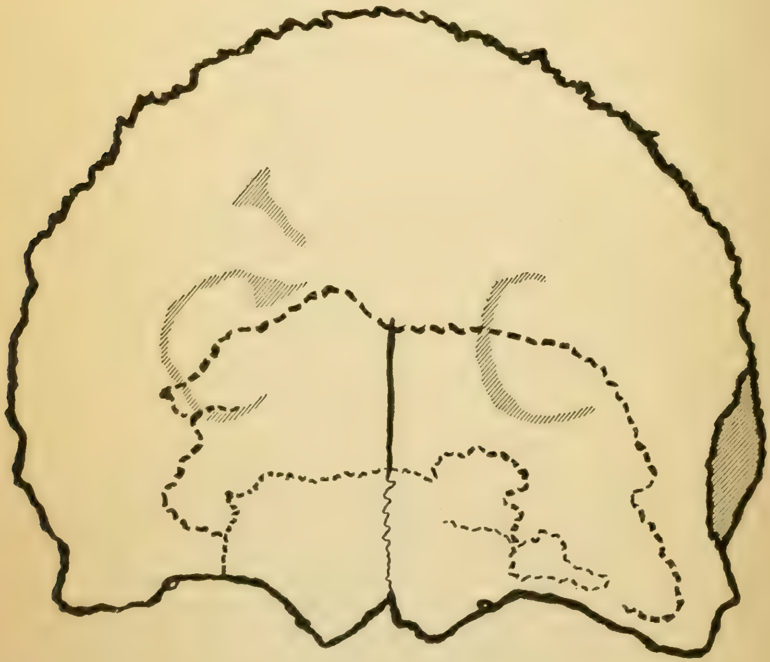
On Sunday morning, May 7, 1893, the steamer *Ohio*, while near Wolf Island, Mississippi, burst a steam flue and scalded 23 of the crew while collected in a narrow gangway eating breakfast, the mate jumping overboard and being drowned. At 2 o'clock of the same day they were brought to the Marine Hospital, Cairo, Ill., 5 dead and 8 in a dying condition. It being impossible to identify the dead, this necropsy is made collectively. The skin of face, neck, trunk, back of hands and arms was peeled off in great shreds, in almost every case more than one-third the surface of the body being affected. Mucous membranes of lips, mouth, and throat also affected. White lead and flour were used on board as a temporary dressing, adding to the difficulty of identification. Of the dead 12 were colored and 1 was white. On account of pressure of work of dressing and caring for the living, the internal organs were not examined, but all the bodies appeared to be those of well-developed, healthy roustabouts.

FRACTURE OF THE SKULL—CEREBRAL HEMORRHAGE.

O. J.; aged 21 years; nativity, Sweden; was admitted to Marine Hospital, Stapleton, Staten Island, N. Y., January 2, 1893, and died January 3.

History.—Patient was brought to the hospital in a semicomatose state. He had fallen off the hoops of the foremast on the 20th of December, 1892; when picked up was unconscious, but soon regained consciousness and became very much nauseated, vomiting several times; he then seemed to improve until the morning of the day of his admission to this hospital, when he complained of great pain in his head, and finally sank into the condition in which he was admitted. On admission ice was applied to his head and hot bottles to his feet, which seemed to improve his condition and also to relieve the cerebral congestion. Ol. Tiglii was administered. The patient, however, never rallied except for a short time on the morning of the 3d, and finally, after several minor convulsions in the afternoon of the 3d, died at 1:59 p. m.

Necropsy (*twenty-four hours after death*).—Body well nourished. No evidences of wound externally. *Rigor mortis* well marked. Hypostatic congestion posteriorly. An ecchymosis between scalp and skull, commencing at parieto-frontal suture and extending down to both frontal eminences. An irregular fracture, commencing over inner third of right orbit, curving upward and backward over frontal bone toward the left, and passing down to the left orbit, as seen in annexed diagram:



A triangular fracture commences at termination of last-described fracture over left orbit; the upper portion of this fracture is somewhat depressed, the lower portion of fragment prominent. A third horseshoe-shaped fracture commences over the middle of the right orbit, passes about 3 cm. above the first described, and ends over the middle of the left orbit. On removing the calvarium numerous fractures were seen over both orbital plates of frontal bone, one also running across the lesser left wing of the sphenoid; there is also a fracture of the greater wing, commencing at the outer border of the lesser wing, running from before backward to the jugular process of occipital bone. Brain very much congested; dura and brain substance under orbital prominences ruptured. A clot about 1 cm. in circumference is seen in second frontal convolution of left side. Other organs not examined.

COMPOUND FRACTURE OF THE SKULL—HERNIA CEREBRI—CEREBRAL ABSCESS.

A. A.; aged 32 years; nativity, Sweden; admitted to U. S. Marine Hospital, Key West, Fla., February 12, 1893; died May 10.

History.—The patient, injured the day before by being struck on the head by the iron bolt of a falling pile, was unconscious when admitted to hospital. Examination showed a compound fracture of the skull in the left parietal region. The scalp wound measured 6 cm. from before backward and 5 cm. from above downward. The upper limit of the wound was 2½ cm. below the sagittal suture; and its anterior limit the same distance behind the binauricular line. The injury to bone appeared to be of the kind termed "pond-fracture," and several of the fragments of bone being loose were removed. In extent the bone injury was as great as the superficial wound. The membranes of the brain were torn and there was laceration of the cerebral surface. The patient presented the typical aspect of concussion of the brain and, awaiting reaction, was treated by rest, the application of antiseptic dressings and the administration of stimulants. Reaction was unaccompanied by any marked symptoms of intracranial inflammation. There was some discharge of a seropurulent nature, and on several successive days numerous bits of bone were removed from the wound. In a fortnight the patient was able to sit up. The right arm and leg were completely paralyzed, but the movements of the facial muscles and tongue were normal. There was no ascertainable anæsthesia nor analgesia of the skin over the paralyzed members. At this period the patient appeared devoid of all intelligence. During his waking hours he sat quietly upon his bed, steadying himself in a sitting posture by the aid of his unparalyzed hand, and was unobservant of objects about him. He took nourishment when placed within his mouth and passed his urine and discharged his bowels at regular intervals, but without appearing to be sensible of the performance of these functions. In the meantime, the wound of the head became covered with granulations, discharging at intervals pieces of necrosed bone and sloughy shreds of dura mater. At the end of two months, the fungous mass protruded 2 cm. above the level of the surrounding scalp, was firm, vascular, pulsatile, and somewhat constricted at its base by an advancing line of new skin forming from the adjacent edges of the scalp. Later, this hernia cerebri became less prominent and compresses were used in its treatment. Six weeks from the time of the receipt of the injury, the surface of the granulations was on a level with the cranial bones. At this time the patient had regained intelligence to a slight degree and was able to make his wants known, but he was greatly emaciated and completely hemiplegic. He suffered from insomnia, which was overcome only by large doses of morphine sulphate. During the week preceding his death the patient was taken with diarrhea, which was not controlled by medicines administered for the purpose of checking the discharges from the bowels; nourishment was not retained by the stomach; prostration became marked; and on May 10 the patient died of asthenia.

Necropsy (*five hours after death*).—*Rigor mortis* slight. Emaciation extreme. The examination was confined to an inspection of the cranium and its contents. At the situation of the injury there was an opening in the scalp 4 by 4 cm. in size, surrounded by cicatrizing skin and presenting a sunken mass of granulation tissue. The edges of the wound were adherent to the bone for a distance of 2 cm. There was a loss of bone over an irregularly oval area of the same size and situation as the original wound and involving the left parietal bone. From the gap in the parietal bone two fissures started, one forward extending across the frontal boss to the situation of the frontal suture 3 cm. above the nasal eminence; the other taking a course downward on the great wing of the sphenoid bone as far as the pterygoid ridge. The fissures involved both plates of the skull. The brain, except in the immediate neighborhood of the wound, was anæmic. There was a loss of substance in the cerebrum involving the upper parts of the ascending frontal and ascending parietal convolutions, and an abscess, containing 10 c. c. of thin, yellowish-green pus, occupied a superficial situation in the upper part of the supramarginal convolution. The pus was inclosed in a firm pyogenic membrane, and the brain substance in the neighborhood of the wound and abscess was infiltrated with inflammatory products.

Remarks.—During the period of nearly three months which elapsed between the time the injury was received and the death of the patient there was at no time any symptom indicative of intracranial pressure, or of the accumulation of inflammatory products within the skull. The loss of brain substance due to traumatism amply accounted for the hemiplegia. There was no rigor, no appreciable elevation of temperature during the course of the patient's illness; and no motorial, sensory, or mental symptom was at any time added to those the patient presented on recovery from the immediate shock of the injury. The presence of the abscess found at the necropsy without the symptoms of antecedent inflammation seems to be explained by the small size of the collection of pus, by its chronicity as shown in the character of the pyogenic membrane, by its situation outside the motor area, and by the facilities for the transmission of pressure which were afforded by the traumatic breach in the bony incasement of the brain.

RUPTURE OF THE ILEUM.

Peritonitis.

F. M.; aged 45 years; nativity, Germany; admitted to the U. S. Marine Hospital, Port Townsend, Wash., May 11, 1893; died May 12.

History.—The patient walked into the hospital late in the afternoon of May 11, and from his staggering gait and incoherent language it was at first thought that he was drunk. After a little questioning he said that he came from Seattle on a passenger steamer, and that he had been hurt five days before, while working on a schooner, by falling off the pilot house and striking a log on deck. He said that he was unconscious for several hours after the fall. He was put to bed on the schooner and a doctor went aboard to see him. He claimed that nothing further was done for him. He felt that he was dangerously injured, and left the boat and came to this hospital. When admitted he was very weak. His tongue was heavily coated, the skin was cold and clammy, pulse rapid and bounding. There was considerable pain on pressure over abdomen, and, as no urine could be drawn off from the bladder, it was thought that that organ had been ruptured. His bowels had not moved since he was hurt, and an enema was given him. The pain was relieved by hypodermatic injection of morphine. He was very ill during the night and died early next day.

Necropsy (six hours after death).—Heart and lungs normal. The abdominal cavity was filled with fecal matter. The coils of intestines and omentum were adherent. In the fold of the great omentum was a large laceration and in the ileum there were two ruptures. These ruptures were about 10 cm. apart. The rents were large enough to insert the finger. Above the upper rent for a distance of 3 decimeters the intestine was gangrenous, due to strangulation caused by tight adhesions. The other organs were normal.

RUPTURE OF SPLEEN.

C. A.; aged 20 years; born in Norway; admitted to Marine Hospital, Stapleton, Staten Island, N. Y., September 23, 1892; died September 25.

For four days previous to admission patient had suffered from headache and general malaise. On physical examination the pulse was found to be 96, respiration 24, temperature 40.4° C. Lungs and heart were normal. No enlargement of liver or spleen was observed. Morning of the 25th temperature was normal and patient stated that he was feeling much better. Evening temperature, 39.4° C. At 9:30 p. m.

he arose, walked across the ward, and, on returning, instead of going to his bed, he raised a window and either jumped or fell 33 feet to the ground. When reached he was able to answer questions intelligently, but apparently had no knowledge of what had happened. Respiration was labored, pulse rapid and scarcely perceptible at the wrist. Countenance was pallid; extremities warm. He remained conscious for one hour, when respiration suddenly became stertorous and gasping; pulse imperceptible. Death occurred at 11 p. m.

Necropsy (*fourteen hours after death*).—Body well nourished. *Rigor mortis* marked. Slight hypostatic congestion posteriorly. Abrasions about 4 cm. in length and 1 cm. in width; one on outer side of left forearm, 5 cm. below outer condyle of humerus; another near middle of crest of left ileum, another near middle of crest of right ileum 2 cm. below it; also two small abrasions in the right lumbar region. Removal of the scalp disclosed an ecchymosis 4 cm. in diameter just posterior to the parietal eminence. Cortex of brain very little congested; otherwise normal. Heart presented no abnormalities. Lungs were somewhat anthracosed, and congested at their bases. Pleuræ nowhere adherent. Abdominal cavity was filled with blood. Stomach, liver, pancreas, and kidneys were normal. Spleen was congested and enlarged to twice its normal size. There were seven ruptures on the external surface, four of which extended two-thirds across the organ, while the other three were about 2 cm. in length. On the internal surface the continuity of the hilum was impaired and covered by a mass of coagulated blood. Bladder contained about 100 c. c. clear yellow urine.

FRACTURE OF THE OS PUBIS.

Urethra divided.

S. I.; aged 35 years; nativity, Norway; admitted to the marine ward of Providence Hospital, Seattle, Wash., February 25, 1893; died March 6.

History.—On the day before his admission to the hospital the patient slipped and fell while trucking a barrel of cement, which rolled against his left hip. He had severe pains in the hip and pelvis accompanied by retention of urine. A catheter was introduced with much difficulty and a large quantity of clear urine drawn off. No fracture of the pelvic bones was discovered at the time. He improved for several days, and for two days passed his urine without the use of the catheter. On the evening of March 4, he had a very severe chill and became unconscious. He died in twenty hours.

Necropsy (*eighteen hours after death*).—*Rigor mortis* well marked. There were no external marks of violence except a contused spot over crest of ilium on left side. There was also a swelling and redness of the perineum caused by the extravasation of the urine into the tissues. There was a comminuted fracture of the left horizontal ramus of the pubes. A sharp edge of a fragment which had been driven inward had completely severed the urethra just in front of the prostate. The pelvis contained many small abscesses caused by the extravasation of urine. All other organs were found normal.

FRACTURE OF THE RIGHT FEMUR AND LACERATION OF THE LIVER.

I. E.; colored; aged 36 years; a native of Tennessee; admitted to the Marine Hospital, St. Louis, Mo., on October 26, 1892; died October 29.

His family history was good. He had pleurisy one year ago. He has been a very intemperate man. Four days before admission, while completely drunk, he fell from a third-story window into an alley. He did not become conscious until he was in the City Hospital. He had some pain in his stomach, but not much in his right leg. His right femur was broken about the junction of the lowest and the third fourth; the fracture extended into the right kneejoint. The joint was not distended nor was it painful. There was a contusion in the right groin. His abdomen was distended a little. He had no fever. He was perfectly comfortable after the leg was dressed. He died very suddenly on October 29, 1892.

Necropsy (*thirty-four hours after death*).—*Rigor mortis* well marked. There was a fracture of the right femur. From a line perpendicular to Poupart's ligament at its center, there was a contused patch of skin and muscular tissue extending 7 cm. to the right and along the crest of the ilium. The posterior part of the right lung was congested and like a blood clot. Pericardium adherent to heart by old adhesion. There were three superficial tears in the liver. One was irregularly semicircular and 12 cm. deep, another 2 cm., and the third 4 cm. long, straight, and 5 cm. deep. There was a little free blood in different parts of the abdomen along the mesentery. Intestines smooth and glossy. The right femur was broken into four parts. The right kneejoint contained some blood.

COMPOUND COMMINUTED FRACTURE OF FEMUR.

Death from the anæsthetic.

J. F.; aged 32 years; nativity, Massachusetts; admitted to U. S. Marine Hospital, Cairo, Ill., December 16, 1892; died December 23.

History.—Patient was shot on the morning of the 16th December, 1892, with a .38-caliber revolver, the ball entering the left thigh just below the hip joint, and fracturing the femur. The ball lodged, but could not be located at the time by the probe. A counter incision was made on the underside of the thigh, and a drainage tube passed through. On the 22d the thigh was opened, pieces of the comminuted bone and the ball extracted, and it was found that owing to the position of the upper fragment amputation at the hip joint was demanded. The patient took the anæsthetic so badly that the operation could not be proceeded with. The wound was dressed temporarily, with the expectation of amputating the next day if his condition would allow of it. His temperature immediately dropped; but in spite of stimulants he rapidly failed, and died at 8 p. m. on the 23d.

Necropsy (*fourteen hours after death*).—*Rigor mortis* excessive. Heart weighed 405 grams, normal. Pericardial sac contained 15 c. c. clear serum. Left lung weighed 480 grams, the right 660 grams, both œdematous at bases. Stomach and intestines normal. Liver weighed 2,010 grams; stained but normal. Pancreas weighed 150 grams, normal. Left kidney weighed 180 grams, right the same; both normal. Spleen weighed 300 grams, normal. Brain and cord not examined. The femur was greatly comminuted, the fracture extending up into the great tuberosity. The upper fragment was tilted directly forward, so that nothing but amputation could have afforded relief.

STATISTICS

U. S. MARINE-HOSPITAL SERVICE.

STATISTICS OF U. S. MARINE-HOSPITAL SERVICE.

TABLE I.—COMPARATIVE TABLE OF NUMBER TREATED—1868 TO 1893.

The following tabular statement will serve to illustrate its growth since the reorganization of the Marine-Hospital Service in 1871:

Operations of the Marine-Hospital Service from July 1, 1868, to June 30, 1893.

Fiscal years.	Number of places at which relief was furnished.	Number of sick and disabled seamen furnished relief.
Prior to reorganization:		
1868	64	11,535
1869	64	11,356
1870	74	10,560
After reorganization:		
1871	72	14,256
1872	81	13,156
1873	91	13,529
1874	91	14,356
1875	94	15,009
1876	94	16,808
1877	100	15,175
1878	210	18,223
1879	210	20,922
1880	210	24,860
1881	....	32,613
1882	....	36,184
1883	....	40,195
1884	....	44,761
1885	....	41,714
1886	....	43,822
1887	....	45,314
1888	....	48,203
1889	....	49,518
1890	....	50,671
1891	....	52,992
1892	....	53,610
1893	....	53,317

TABLE II.—EXHIBIT OF OPERATIONS OF THE SERVICE DURING THE YEAR ENDED JUNE 30, 1893.

Ports.	Total number of seamen treated.	Patients in hospital July 1, 1892.	Admitted during the year.	Total treated in hospital.	Discharged.	Died.	Remaining in hospital June 30, 1893.	Number of days' relief in hospital.	Number of seamen furnished office relief.	Number of times relief was furnished.	Number of persons examined physically, including pilots.	Amount expended.	Tonnage tax collected.
Total	**53,317**	**907**	**13,950**	**14,857**	**13,514**	**478**	**865**	**398,745**	**38,460**	**58,448**	**3,070**	**$493,499.01**	**$539,233.14**
Albany, N. Y	3	1	2	3	3			76			27	176.00	
Alexandria, Va	93	1	6	7	6		1	99	86	237		260.95	39.45
Apalachicola, Fla	54		32	32	31	1		546	22	27		833.50	2,347.77
Ashland, Wis	85	5	35	40	38	1	1	874	45	45		902.10	
Ashtabula, Ohio	258	3	46	49	45	1	3	1,063	209	417		1,354.64	
Astoria, Oreg	56	3	28	31	30	1		861	25	48		1,070.95	4,683.63
Baltimore, Md	1,999	42	485	527	468	18	41	19,421	1,472	2,009	171	16,089.75	22,830.72
Bangor, Me	112	3	38	41	32	5	4	594	71	89	14	1,773.38	102.15
Barnstable, Mass., and subports	78								78	224		238.10	178.83
Bath, Me	89	3	30	33	29		4	765	56	136		1,085.00	129.09
Beaufort, N. C	28		2	2	2			41	26	84		203.70	
Beaufort, S. C	22		2	2	2			31	20	44		118.10	2,441.78
Belfast, Me	8		2	2	2			44	6	15		253.80	148.05
Bismarck, N. Dak	42		7	7	6		1	174	35	70		356.60	
Boston, Mass	3,132	60	1,027	1,087	1,007	29	51	26,858	2,045	2,563	219	23,170.81	46,829.46
Bridgeport, Conn	17	1	9	10	10			224	7	7		232.00	89.49
Bridgeton, N. J													87.66
Brownsville, Tex	2		2	2	2			46			11	130.00	4.32
Brunswick, Ga	193	1	84	85	76	3	6	1.846	108	135		2,003.05	5,850.84
Buffalo, N. Y	1,801	29	301	330	306	11	13	8,613	1,471	1,995	136	10,310.88	
Burlington, Iowa	11		11	11	10		1	322				296.10	
Burlington, Vt													392.94
Cambridge, Md	152		18	18	17	1		154	134	270		465.14	
Cairo, Ill	686	9	269	278	250	21	7	3,865	408	510	28	7,733.83	
Castine, Me	3								3	4		4.00	17.31
Cedar Keys, Fla	160								160	173		176.00	5.58
Charleston, S. C	1,198	11	189	200	183	7	10	4,050	998	1,329	36	6,531.44	3.477.18
Chattanooga, Tenn	32		9	9	8	1		198	23	126		429.36	
Chicago, Ill	3,140	52	674	726	657	20	49	22,470	2,414	2,928	148	23,031.83	10.92
Cincinnati, Ohio	1,405	12	380	392	343	17	32	10,574	1,013	1,483	7	12,935.30	
Cleveland, Ohio	2,039	32	319	351	315	13	23	9,980	1,688	2,491	41	9,358.72	117.54
Corpus Christi, Tex	16		9	9	8		1	132	7	14	16	491.70	
Darien, Ga	62								62	102		263.55	
Detroit, Mich	1,640	20	275	295	268	10	17	10,020	1,345	1,913	123	13,063.06	70.83
Dubuque, Iowa	76	3	46	49	46		3	720	27	37	17	1,231.15	
Duluth, Minn	233	3	40	43	39	2	2	1,045	190	243	32	1,348.16	144.87
Eastport, Me	15								15	24		21.00	1,076.00
Edenton, N. C	106		7	7	7			129	99	180		481.50	
Edgartown, Mass.*												60.00	303.90

Elizabeth City, N. C	50	....	1	1	1	....	....	20	49	83	145	265.00	....
Ellsworth, Me	46	1	6	7	7	....	....	133	39	156	3	367.00	49.20
Erie, Pa	113	4	36	40	38	....	2	995	73	73	....	956.45	....
Escanaba, Mich	185	3	50	53	46	3	4	1,455	132	145	....	2,051.12	....
Eureka, Cal	70	2	36	38	37	....	1	746	32	40	1	1,119.00	60.75
Evansville, Ind	943	13	246	259	239	9	11	5,033	684	969	92	8,661.11	....
Fall River, Mass	....	....	....	....	....	....	....	....	....	....	....	....	67.38
Fernandina, Fla	101	....	30	30	28	....	2	808	71	148	....	1,168.00	1,840.38
Fort Benton, Mont	....	....	....	....	....	....	....	....	....	....	....	....	151.34
Fredericksburg, Va	115	1	25	26	25	....	1	572	89	193	....	855.50	....
Gallipolis, Ohio	315	5	139	144	139	....	5	2,974	171	339	....	2,937.24	....
Galveston, Tex	536	3	147	150	138	4	8	3,225	386	549	167	5,962.50	12,326.69
Georgetown, D. C	173	1	54	55	51	2	2	1,172	118	179	8	880.20	64.26
Georgetown, S. C	138	....	21	21	19	1	1	257	117	265	....	600.60	8.82
Gloucester, Mass	339	....	....	....	....	....	....	....	339	385	....	672.37	630.03
Government Hospital for Insane, Washington, D. C	32	24	8	32	6	1	25	9,281	....	....	....	5,982.85	....
Grand Haven, Mich	43	1	9	10	9	....	1	242	33	126	71	657.20	....
Green Bay, Wis	40	2	13	15	15	....	....	369	25	25	....	698.92	....
Hartford, Conn	8	....	8	8	8	....	....	199	....	....	....	199.00	3.30
Jacksonville, Fla	94	2	56	58	56	....	2	1,428	36	63	30	1,573.00	154.10
Keokuk, Iowa	5	....	4	4	4	....	....	68	1	1	....	34.00	....
Key West, Fla	917	6	104	110	92	7	11	4,563	807	990	8	7,436.34	1,464.30
La Crosse, Wis	118	4	70	74	71	1	2	1,155	44	100	2	1,723.29	....
Lewes, Del	29	....	27	27	25	2	....	480	2	2	....	555.60	....
Little Rock, Ark	13	....	....	....	....	....	....	....	13	23	16	240.00	....
Los Angeles, Cal	....	....	....	....	....	....	....	....	....	....	....	....	2,393.44
Louisville, Ky	1,074	15	329	344	316	8	20	8,874	730	1,102	21	10,358.61	....
Ludington, Mich	115	....	9	9	9	....	....	126	106	137	....	366.50	....
Machias, Me	57	3	24	27	27	....	....	686	30	63	....	906.53	139.05
Manistee, Mich	36	1	21	22	20	....	2	495	14	26	27	655.05	....
Marblehead, Mass	....	....	....	....	....	....	....	....	....	....	....	....	55.56
Marquette, Mich	52	....	21	21	17	1	3	455	31	31	....	841.70	11.00
Marshfield, Oreg	135	....	15	15	13	....	2	560	120	253	....	1,283.70	....
Memphis, Tenn	1,339	11	275	286	266	11	9	6,391	1,053	1,273	11	8,944.48	....
Michigan City, Ind	27	....	....	....	....	....	....	....	27	58	....	152.30	....
Milwaukee, Wis	868	16	354	370	346	5	19	8,582	498	682	66	8,270.70	....
Mobile, Ala	810	11	234	245	222	10	13	6,209	565	704	19	11,857.43	8,247.99
Nashville, Tenn	158	1	22	23	23	....	....	485	135	278	....	929.30	....
Newark, N. J	....	....	....	....	....	....	....	....	....	....	....	....	372.33
New Bedford, Mass	59	....	2	2	1	1	....	24	57	113	....	142.49	195.66
Newbern, N. C	189	4	70	74	68	2	4	1,623	115	234	....	2,075.25	9.36
Newburyport, Mass	....	....	....	....	....	....	....	....	....	....	....	....	29.28
New Haven, Conn	87	7	52	59	54	3	2	1,489	28	29	19	2,104.00	441.09
New London, Conn	176	2	123	125	112	1	12	2,726	51	68	....	2,543.30	108.54
Newport, Ark	35	....	18	18	18	....	....	254	17	20	....	513.00	....
Newport, R. I	60	....	18	18	18	....	....	540	42	47	38	891.45	98.13
Newport News, Va	83	....	....	....	....	....	....	....	83	87	....	243.80	4,159.86
New Orleans, La	2,375	37	602	639	595	18	26	12,280	1,736	2,226	74	21,047.17	38,605.07
New York, N. Y	4,076	105	1,127	1,232	1,089	54	89	37,211	2,844	4,345	264	48,188.07	202,812.25

* Included in Vineyard Haven.

TABLE II.—EXHIBIT OF OPERATIONS OF THE SERVICE DURING THE YEAR ENDED JUNE 30, 1893—Continued.

Ports.	Total number of seamen treated.	Patients in hospital July 1, 1892.	Admitted during the year.	Total treated in hospital.	Discharged.	Died.	Remaining in hospital June 30, 1893.	Number of days' relief in hospital.	Number of seamen furnished office relief.	Number of times relief was furnished.	Number of persons examined physically, including pilots.	Amount expended.	Tonnage tax collected.
Norfolk, Va	1,673	33	409	442	397	21	24	9,723	1,231	1,594	127	$13,142.12	$2,239.29
Ogdensburg, N. Y	141	....	3	3	3	....	....	67	138	205	....	444.38	67.44
Oswego, N. Y	120	1	12	13	10	2	1	505	107	180	12	1,042.45	1,525.38
Pensacola, Fla	148	6	125	131	119	4	8	2,604	17	34	16	3,344.61	19,234.35
Perth Amboy, N. J	....	....	....	....	....	....	....	....	....	....	....	....	875.16
Philadelphia, Pa	1,795	27	620	647	594	18	35	12,808	1,148	1,823	249	20,575.63	60,187.22
Pittsburg, Pa	1,216	6	183	189	173	6	10	3,777	1,027	1,436	48	6,156.16	....
Plattsburg, N. Y	....	....	....	....	....	....	....	....	....	....	....	....	2,717.94
Plymouth, Mass	....	....	....	....	....	....	....	....	....	....	....	....	2.94
Port Huron, Mich	149	3	14	17	16	....	1	343	132	406	....	466.74	....
Portland, Me	817	10	197	207	190	4	13	7,175	610	756	80	9,447.82	5,995.46
Portland, Oreg	470	2	146	148	140	4	4	4,180	322	453	21	5,412.91	22.95
Portsmouth, N. H	20	....	20	20	19	....	1	467	....	....	....	767.00	29.10
Port Townsend, Wash	528	21	195	216	190	8	18	10,137	312	406	....	9,580.41	9,236.58
Providence, R. I	252	3	115	118	111	2	5	1,994	134	161	....	2,358.30	386.34
Richmond, Va	72	2	35	37	35	....	2	867	35	36	1	1,444.23	402.51
Rochester, N. Y	....	....	....	....	....	....	....	....	....	....	....	....	49.17
Rockland, Me	195	4	145	149	148	....	1	2,179	46	46	....	2,736.20	....
Rome, Ga	15	....	4	4	4	....	....	47	11	31	....	215.70	....
Sag Harbor, N. Y	14	....	....	....	....	....	....	....	14	217	....	217.00	....
Saginaw, Mich	64	2	21	23	23	....	....	816	41	55	....	861.67	....
Salem, Mass	24	....	1	1	1	....	....	44	23	24	....	27.62	239.31
St. Augustine, Fla	....	....	....	....	....	....	....	....	....	....	....	....	6.96
St. Louis, Mo	1,958	32	615	647	599	17	31	14,260	1,311	1,832	28	13,204.00	....
St. Marys, Ga	....	....	....	....	....	....	....	....	....	....	....	....	47.43
St. Paul, Minn	19	2	17	19	17	1	1	574	....	....	....	889.00	32.94
St. Vincent, Minn	....	....	....	....	....	....	....	....	....	....	....	....	63.45
San Diego, Cal	166	2	88	90	84	1	5	2,961	76	476	....	4,210.25	3,377.39
Sandusky, Ohio	122	1	54	55	53	1	1	1,152	67	93	....	1,451.67	....
San Francisco, Cal	3,363	111	856	967	824	46	97	43,729	2,396	5,896	241	33,575.34	41,174.83
San Pedro, Cal	197	10	106	116	109	....	7	3,833	81	176	....	4,405.60	....
Sault Ste. Marie, Mich	467	12	101	113	99	4	10	1,755	354	393	....	2,157.85	....
Savannah, Ga	1,071	7	291	298	281	9	8	6,327	773	908	20	9,441.06	11,595.60
Seattle, Wash	581	7	116	123	108	5	10	3,599	458	833	74	3,344.78	....
Shieldsboro, Miss	....	....	....	....	....	....	....	....	....	....	....	....	8,488.00
Shreveport, La	160	....	13	13	13	....	....	194	147	1,218	....	983.74	....
Sitka, Alaska	17	....	6	6	4	1	1	130	11	25	....	1,137.00	455.25
Solomons, Md	417	....	19	19	18	1	....	250	398	471	....	715.81	....
Somers Point, N. J	1	....	....	....	....	....	....	....	1	3	....	3.00	....
Stonington, Conn	....	....	....	....	....	....	....	....	....	....	....	....	36.00
Superior, Wis	35	....	5	5	5	....	....	59	30	36	....	289.59	....

Tacoma, Wash	21	1	19	20	20	....	....	550	1	1	....	624.31	....
Tampa, Fla	20	....	2	2	2	....	....	9	18	19	....	183.87	1,350.66
Tappahannock, Va.	223	1	60	61	60	....	1	785	162	418	....	1,805.00	....
Toledo, Ohio	247	6	104	110	105	1	4	1,951	137	200	13	1,877.10	....
Tuckerton, N. J.	11	1	....	1	1	....	....	314	10	52	17	702.48	....
Vicksburg, Miss	74	3	58	61	58	2	1	1,063	13	16	....	1,580.76	....
Vineyard Haven, Mass	295	5	110	115	106	3	6	2,588	180	187	....	5,828.74	....
Waldoboro, Me	....	....	....	....	....	....	....	....	....	....	....	....	982.32
Washington, D. C	....	....	....	....	....	....	....	....	....	....	....	14,022.01	....
Wheeling, W. Va	76	....	34	34	31	1	2	673	42	77	....	809.35	....
Wilmington, Del	1	....	....	....	....	....	....	....	1	1	....	....	332.91
Wilmington, N. C.	579	7	127	134	121	6	7	3,567	445	522	15	5,613.55	2,028.18
Wiscasset, Me	5	....	1	1	....	1	....	6	4	90	....	....	203.55
Yaquina, Oreg	....	....	....	....	....	....	....	....	....	....	....	155.93	....
Cape Charles Quarantine	72	....	66	66	66	....	....	322	6	15	....	23,738.87	....
Gulf Quarantine	27	....	17	17	15	1	1	96	10	15	....	15,647.76	....
Key West Quarantine	93	....	26	26	25	1	....	235	67	108	....	11,413.16	....
San Francisco Quarantine	1	....	1	1	....	1	....	10	....	....	....	15,940.05	....
South Atlantic Quarantine	5	....	3	3	3	....	....	....	2	2	....	11,149.49	....

TABLE III.—SUMMARY OF PHYSICAL EXAMINATIONS OF SEAMEN MADE BY MEDICAL OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE FOR THE YEAR ENDED JUNE 30, 1893.

Summary of examinations and causes of rejection.	Total.	Pilots.	Revenue Marine.	Merchant Marine.	Life-Saving Service.
Summary of examinations:					
Total number examined	3,070	1,353	279	343	1,095
Number passed	2,949	1,305	257	333	1,054
Number rejected	121	48	22	10	41
Causes of rejection:					
Malarial fever			1		1
Syphilis		2	1	1	3
Gonorrhœa		3	1		
Tubercle of lung					4
Epilepsy		1			
Myopia			1	5	1
Color blindness		34	2		7
Imperfect vision			1		2
Suppurative inflammation of middle ear			1		
Perforation of ear drum					1
Deafness			1		1
Valvular disease of heart		1	1	2	3
Hypertrophy of heart			2		1
Irregular action of heart					3
Varicose veins		1	2		2
Bronchitis, chronic					1
Original dullness, apices, both lungs					1
Hypertrophy of tonsils			2		
Catarrh, throat and nose					1
Tonsilitis, chronic			1	1	
Hernia, right, inguinal			1		1
Fistula in ano		1			1
Stricture, urethra, organic		1	1		2
Ulcer of penis		3	1		4
Varicocele		1		1	1
Insufficient chest expansion			1		
Stature less than 5 feet			1		

TABLE IV.—STATEMENT, BY DISTRICTS, OF THE NUMBER OF PATIENTS TREATED DURING THE YEAR ENDED JUNE 30, 1893.

Districts.	Total.	Patients in hospital July 1, 1892.	Admitted during the year.	Total number treated in hospital.	Discharged.	Died.	Patients in hospital June 30, 1893.	Number of days hospital relief was furnished.	Number of seamen furnished office relief.
Grand total	**53,317**	**907**	**13,950**	**14,857**	**13,514**	**478**	**865**	**398,745**	**38,460**
North Atlantic	5,606	92	1,736	1,828	1,698	45	85	44,097	3,778
Middle Atlantic	6,218	144	1,968	2,112	1,896	78	138	55,527	4,106
South Atlantic	8,863	137	1,999	2,136	1,927	72	137	62,451	6,727
The Gulf	5,213	63	1,274	1,337	1,226	44	67	29,855	3,876
The Ohio	5,219	52	1,342	1,394	1,272	42	80	32,588	3,825
The Mississippi	4,376	64	1,390	1,454	1,345	53	56	28,846	2,922
The Great Lakes	12,020	196	2,517	2,713	2,482	75	156	73,432	9,307
The Pacific	5,604	159	1,611	1,770	1,559	66	145	71,286	3,834
The quarantine stations	198		113	113	109	3	1	663	85

TABLE V.—RATIO OF PATIENTS TREATED IN HOSPITAL IN EACH DISTRICT.

Districts.	Per cent of total number of patients.	Districts.	Per cent of total number of patients.
North Atlantic	32.61	The Mississippi	33.23
Middle Atlantic	33.96	The Great Lakes	22.57
South Atlantic	24.10	The Pacific	31.58
The Gulf	25.65	The quarantine stations	56.57
The Ohio	26.71		

TABLE VI.—AVERAGE DURATION OF TREATMENT IN HOSPITAL IN EACH DISTRICT.

Districts.	Average number of days relief furnished to each patient.	Districts.	Average number of days relief furnished to each patient.
North Atlantic	24.12	The Mississippi	19.84
Middle Atlantic	26.29	The Great Lakes	27.07
South Atlantic	29.23	The Pacific	40.37
The Gulf	22.33	The quarantine stations	5.87
The Ohio	23.37		

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Grand total of all cases	**907**	**13,950**	**8,876**	**4,323**	**315**	**478**	**865**	**38,460**	**53,317**
GENERAL DISEASES	377	6,334	3,874	2,114	132	228	363	17,972	24,683
LOCAL DISEASES	396	5,488	3,423	1,728	161	207	365	17,479	23,368
POISONS AND POISONED WOUNDS	......	21	15	3	2	....	1	44	65
INJURIES AND AMPUTATIONS	134	2,107	1,564	478	20	43	136	2,965	5,206

NORTH ATLANTIC.

TOTAL CASES	**92**	**1,736**	**1,107**	**564**	**27**	**45**	**85**	**3,778**	**5,606**
General Diseases	**41**	**690**	**418**	**256**	**11**	**25**	**26**	**1,537**	**2,268**
Cowpox	......	......	......	......	......	....	......	88	88
Measles	......	12	12	......	......	....	......	2	14
Influenza	......	19	12	7	......	....	......	40	59
Mumps	......	......	......	......	......	....	......	2	2
Simple continued fever	1	1	2	......	......	....	......	1	3
Enteric fever	5	41	33	1	1	8	3	3	49
Epidemic diarrhea	......	......	......	......	......	....	......	1	1
Dysentery	......	7	7	......	......	....	......	11	18
Malarial intermittent fever	2	132	118	12	......	1	3	76	210
Malarial remittent fever	......	15	13	......	......	....	2	9	24
Malarial cachexia	......	10	6	3	......	....	1	14	24
Beri-beri	......	1	......	......	......	1	......	1	2
Erysipelas, simple	......	6	4	2	......	....	......	4	10
Syphilis:									
Primary	......	6	5	1	......	....	......	32	38
Secondary	6	90	10	80	1	1	4	238	334
Gonorrhœa	4	73	52	21	......	....	4	472	549
Animal parasites	......	......	......	......	......	....	......	2	2
Vegetable parasites	......	......	......	......	......	....	......	1	1
Scurvy	......	1	1	......	......	....	......	......	1
Alcoholism	......	11	7	2	2	....	......	11	22
Delirium tremens	1	2	1	2	......	....	......	......	3
Debility	......	6	1	4	......	....	1	108	114
Rheumatic fever	1	16	14	3	......	....	......	8	25
Rheumatism	10	166	108	61	2	....	5	344	520
Osteo-arthritis	1	......	......	1	......	....	......	1	2
Non-malignant new growth		5	4	1	......	....	......	21	26
Malignant new growth	......	1	......	......	......	1	......	4	5
Tubercle	9	64	1	52	5	12	3	37	110
Scrofula	......	......	......	......	......	....	......	2	2
Leprosy	......	1	......	......	......	1	......	......	1
Purpura	......	1	1	......	......	....	......	1	2
Anæmia	......	3	1	2	......	....	......	3	6
Diabetes mellitus	1	......	......	1	......	....	......	......	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

NORTH ATLANTIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases	**36**	**795**	**504**	**245**	**15**	**19**	**48**	**1,851**	**2,682**
DISEASES OF THE NERVOUS SYSTEM	3	34	10	19	1	2	5	86	123
Congestion, cerebral		1		1				2	3
Anæmia, cerebral		1		1					1
Inflammation:									
Of cerebral membranes		1				1			1
Of spinal cord and its membranes								1	1
Myelitis		2					2		2
Neuritis		2	1				1		2
Progressive muscular atrophy	1				1				1
Locomotor ataxy	1	3		4				1	5
Apoplexy								2	2
Paralysis		1		1					1
Hemiplegia		3		1		1	1	1	4
Local paralysis		4	1	3				4	8
Spasm of muscle								1	1
Hyperæsthesia		1		1					1
Neuralgia		1	1					41	42
Facial		4	4					11	15
Sciatica		7	2	4			1	6	13
Megrim		1	1					12	13
Epilepsy	1	2		3				4	7
MENTAL DISEASES	2	9	1	5	2		3	10	21
Hypochondriasis		6	1	4	1			10	16
Insanity	1						1		1
Melancholia	1						1		1
Dementia		3		1	1		1		3
DISEASES OF THE EYE		17	8	7			2	66	83
Conjunctivitis		8	5	2			1	44	52
Ulcer of cornea		1		1					1
Opacity of cornea								3	3
Iritis		3	1	2				4	7
Choroiditis								2	2
Glaucoma synechia		1		1					1
Cataract		1					1		1
Ametropia		1		1					1
Day blindness								2	2
Amblyopia								2	2
Inflammation of lachrymal gland		1	1					2	3
Dacryocystitis								1	1
Stricture of nasal duct		1	1						1
Hæmatoma								1	1
Blepharitis								2	2
Stye								2	2
Ptosis								1	1
DISEASES OF THE EAR		6	4	2				24	30
Acute inflammation of the external meatus								1	1
Abscess of the external meatus								2	2
Accumulation of wax								4	4
Inflammation of the middle ear		6	4	2				16	22
Perforation of membrana tympani								1	1
DISEASES OF THE NOSE		1		1				34	35
Nasal catarrh		1		1				29	30
Ozæna								5	5
DISEASES OF THE CIRCULATORY SYSTEM	1	20	1	11		4	5	27	48
Endocarditis		1		1					1
Valvular disease:									
Aortic	1	9		5		3	2		10
Mitral		4		3			1	8	12
Pulmonic								2	2
Hypertrophy of heart								2	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

NORTH ATLANTIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged. Recovered.	Discharged. Improved.	Discharged. Not improved.	Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
Local Diseases—Continued.									
DISEASES OF THE CIRCULATORY SYSTEM—Continued.									
Dilatation of heart	......	......	......	......	......	......	......	1	1
Angina pectoris	......	1	......	1	......	......	......	......	1
Palpitation and irregular action of heart.	......	......	......	......	......	......	......	7	7
Aneurism of arteries	......	4	......	1	......	1	2	......	4
Phlebitis	......	1	1	......	......	......	......	......	1
Varix	......	......	......	......	......	......	......	7	7
DISEASES OF THE RESPIRATORY SYSTEM	4	115	79	31	2	4	3	385	504
Laryngitis:									
Acute	......	1	1	......	......	......	......	15	16
Catarrhal	......	......	......	......	......	......	......	2	2
Bronchitis:									
Acute	2	52	43	9	......	......	2	250	304
Chronic	......	20	9	9	1	1	......	61	81
Catarrhal	......	2	2	......	......	......	......	12	14
Spasmodic asthma	1	10	3	8	......	......	......	16	27
Passive congestion of lung	......	......	......	......	......	......	......	1	1
Hemorrhage of lung	......	4	2	1	1	......	......	1	5
Pneumonia	1	10	8	......	......	3	......	2	13
Pneumonic phthisis, chronic	......	1	......	1	......	......	......	3	4
Atelectasis	......	1	1	......	......	......	......	......	1
Pleurisy:									
Acute	......	9	9	......	......	......	......	15	24
Chronic	......	3	1	1	......	......	1	6	9
Empyema	......	2	......	2	......	......	......	1	3
DISEASES OF THE DIGESTIVE SYSTEM	5	165	114	44	4	3	5	486	656
Stomatitis	......	......	......	......	......	......	......	2	2
Ulcerative stomatitis	......	......	......	......	......	......	......	2	2
Abscess of the antrum	......	1	......	1	......	......	......	......	1
Ulceration of the dental pulp	......	......	......	......	......	......	......	1	1
Caries of dentine and cementum	......	......	......	......	......	......	......	6	6
Abscess of dental periosteum	......	......	......	......	......	......	......	2	2
Ulceration of gums and alveoli	......	......	......	......	......	......	......	1	1
Caries of the alveoli	......	......	......	......	......	......	......	3	3
Toothache	......	......	......	......	......	......	......	14	14
Inflammation of the tongue	......	......	......	......	......	......	......	1	1
Ulcer of the tongue	......	......	......	......	......	......	......	4	4
Hypertrophy of tonsils	......	......	......	......	......	......	......	1	1
Elongated uvula	......	......	......	......	......	......	......	2	2
Sore throat	......	2	1	......	......	......	1	24	26
Quinsy	......	4	4	......	......	......	......	5	9
Follicular tonsilitis	......	17	14	2	......	......	1	28	45
Abscess of salivary glands	......	2	2	......	......	......	......	......	2
Follicular inflammation of the pharynx	......	10	8	1	1	......	......	20	30
Inflammation of the stomach	1	5	4	2	......	......	......	18	24
Ulceration of the stomach	1	......	......	......	......	1	......	......	1
Dilatation of the stomach	......	1	1	......	......	......	......	......	1
Dyspepsia	......	23	9	12	2	......	......	114	137
Pyrosis	......	......	......	......	......	......	......	1	1
Inflammation of the intestines:									
Catarrhal	......	19	16	1	......	......	2	18	37
Ulcerative	......	5	4	1	......	......	......	4	9
Tympanites	......	......	......	......	......	......	......	1	1
Obstruction of the intestines	......	3	2	......	......	1	......	1	4
Hernia	......	......	......	......	......	......	......	56	56
Diarrhœa	1	33	24	8	1	......	1	67	101
Constipation	......	1	1	......	......	......	......	40	41
Colic	......	3	2	......	......	1	......	8	11
Abcess of the rectum	......	3	1	2	......	......	......	1	4
Piles:									
Internal	1	9	5	5	......	......	......	16	26
External	......	3	2	1	......	......	......	12	15

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES, AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

NORTH ATLANTIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE DIGESTIVE SYSTEM—Continued.									
Fistula in ano	1	4	4	1				1	6
Fissure of the anus		2	2						2
Congestion of the liver		3	3					1	4
Hepatitis								1	1
Cirrhosis of liver		3		3				1	4
Jaundice		1	1					2	3
Inflammation of hepatic ducts and gall bladder		3	2	1				3	6
Gallstones		1		1					1
Biliary colic								2	2
Peritonitis		4	2	2				2	6
DISEASES OF THE LYMPHATIC SYSTEM	6	62	44	20	2		2	69	137
Congestion of the spleen								1	1
Hypertrophy of lymph glands	2	6	6	2				9	17
Inflammation of lymph vessels								1	1
Inflammation of lymph glands	1	20	12	6	2		1	41	62
Suppuration of lymph glands	3	36	26	12			1	17	56
DISEASES OF THE THYROID BODY		1					1		1
Inflammation		1					1		1
DISEASES OF THE SUPRA-RENAL CAPSULES		1					1		1
Addison's disease							1		1
DISEASES OF THE URINARY SYSTEM	2	19	3	13		5		45	66
Acute nephritis		2		1		1		2	4
Bright's disease	1	9		6		4		6	16
Calculus in kidney								3	3
Diabetes insipidus	1			1				1	2
Hæmaturia								1	1
Lithuria								1	1
Inflammation of bladder:									
Acute		4	2	2				6	10
Subacute								1	1
Chronic		3	1	2				15	18
Calculus of bladder								1	1
Irritability of bladder		1		1				2	3
Retention of urine								2	2
Incontinence of urine								4	4
DISEASES OF THE GENERATIVE SYSTEM	8	162	119	41	2		8	261	431
Urethritis								5	5
Gleet								21	21
Stricture of urethra:									
Organic	2	39	19	17	1		4	56	97
Spasmodic								1	1
Urinary fistula		1		1					1
Hypertrophy of prostate gland								1	1
Acute inflammation of prostate gland		1		1				1	2
Chronic inflammation of prostate gland		1		1				3	4
Inflammation of the penis								1	1
Inflammation of glans penis								7	7
Abscess of penis		2	2						2
Ulcer of penis	3	78	66	11			4	117	198
Phimosis		1	1					1	2
Paraphimosis		2	2					3	5
Chordee								1	1
Hydrocele of spermatic cord								2	2
Varicocele		4	2	1	1			5	9
Hydrocele of tunica vaginalis		2		2				10	12
Orchitis:									
Acute	2	11	11	2				13	26
Chronic								2	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

NORTH ATLANTIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE GENERATIVE SYSTEM—Continued.									
Epididymitis		19	15	4				5	24
Spermatorrhœa	1			1				5	6
Impotence								1	1
Inflammation of the breast		1	1						1
DISEASES OF THE ORGANS OF LOCOMOTION		32	15	13	1	1	2	19	51
Periostitis		2	1		1			1	3
Chronic abscess of bones		1	1					1	2
Necrosis		1		1					1
Ununited fracture, or false joint								1	1
Drops of joints		1		1					1
Synovitis:									
Acute		8	4	2			2	4	12
Chronic		3	2	1				5	8
Ankylosis		1		1				1	2
Dislocation of articular cartilage		1		1					1
Caries and necrosis of spine		3		2		1			3
Inflammation of muscles								1	1
Atrophy of muscles								1	1
Inflammation of tendons		1		1					1
Talipes valgus		2		2					2
Inflamed bursa		5	5					3	8
Bursal abscess		1	1					1	2
Thecal abscess		1	1						1
Bunion		1		1					1
DISEASES OF THE CONNECTIVE TISSUE	2	43	27	12			6	54	99
Œdema								2	2
Inflammation		14	9	5				21	35
Abscess	2	29	18	7			6	31	62
DISEASES OF THE SKIN	2	102	73	26			5	239	343
Erythema								1	1
Urticaria								2	2
Eczema		2	1				1	30	32
Impetigo								2	2
Pityriasis								1	1
Psoriasis		3		3				3	6
Herpes		1	1					15	16
Zona								3	3
Acne								4	4
Sycosis								2	2
Steatorrhœa								1	1
Ichthyosis								1	1
Frostbite		26	23	2			1	22	48
Ulcer	2	29	18	12			1	87	118
Fissures								4	4
Boil		22	17	4			1	35	57
Carbuncle		2	1	1				8	10
Gangrene		3	1	1			1		3
Whitlow		10	7	3				12	22
Onychia		1	1						1
Corn								1	1
Wen		3						3	6
Pruritus								2	2
PARASITIC DISEASES OF THE SKIN	1	6	6		1			46	53
Ringworm								3	3
Itch	1	6	6		1			40	47
Phthiriasis								2	2
Unclassified								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

NORTH ATLANTIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Poisons	......	......	......	......	......	....	......	8	8
Iodism	......	......	......	......	......	....	......	1	1
Vegetable poisons	......	......	......	......	......	....	......	7	7
POISONED WOUNDS	......	......	......	......	......	....	......	1	1
Venomous animals	......	......	......	......	......	....	......	1	1
Injuries	15	251	190	63	1	1	11	381	647
GENERAL INJURIES	1	17	14	3	......	....	1	40	58
Burns and scalds	......	12	8	3	......	....	1	12	24
Effects of cold	......	......	......	......	......	....	......	20	20
Heat-stroke	......	......	......	......	......	....	......	1	1
Multiple injury	1	4	5	......	......	....	......	6	11
Asphyxia	......	1	1	......	......	....	......	......	1
Shock	......	......	......	......	......	....	......	1	1
LOCAL INJURIES	14	234	176	60	1	1	10	341	589
Rupture of veins	......	1	......	1	......	....	......	......	1
Strain of muscles	......	2	......	1	......	....	1	12	14
Strain of tendons	......	......	......	......	......	....	......	1	1
Foreign body in subcutaneous tissue	......	......	......	......	......	....	......	1	1
Contusion of scalp	......	......	......	......	......	....	......	1	1
Scalp wound:									
Bone not exposed	......	3	3	......	......	....	......	11	14
Bone exposed	......	1	1	......	......	....	......	1	2
Fracture of the vault of the skull	......	1	1	......	......	....	......	1	2
Concussion of brain	1	......	1	......	......	....	......	......	1
Contusion of face	......	3	1	2	......	....	......	6	9
Wound of face and mouth	......	9	7	2	......	....	......	7	16
Fracture of facial bones	1	1	1	......	......	1	......	2	4
Dislocation of the lower jaw	......	......	......	......	......	....	......	1	1
Foreign body in cornea or conjunctiva	......	......	......	......	......	....	......	4	4
Wound of eyelid	......	1	1	......	......	....	......	2	3
Wound of the cornea	......	......	......	......	......	....	......	1	1
Wound of the parts within the orbit	......	1	......	1	......	....	......	......	1
Wound of neck	......	......	......	......	......	....	......	1	1
Foreign body in the pharynx	......	......	......	......	......	....	......	1	1
Contusion of the chest	......	5	3	2	......	....	......	23	28
Fracture of the ribs	1	11	9	3	......	....	......	8	20
Wound of parietes of chest	......	2	1	......	......	....	1	......	2
Contusion of back	......	12	11	1	......	....	......	15	27
Sprain of back	......	7	7	......	......	....	......	11	18
Wound of back	......	......	......	......	......	....	......	1	1
Concussion of cord	......	......	......	......	......	....	......	1	1
Compression of cord without fracture	......	1	......	1	......	....	......	......	1
Contusion of abdomen	......	1	1	......	......	....	......	1	2
Contusion of the pelvis	......	......	......	......	......	....	......	1	1
Contusion of the urethra, perineum, scrotum, and penis	......	......	......	......	......	....	......	1	1
Wound of the urethra, perineum, scrotum, and penis	......	1	1	......	......	....	......	......	1
Contusion of upper extremities	2	11	8	4	......	....	1	35	48
Sprain of the shoulder	......	1	1	......	......	....	......	3	4
Sprain of the elbow	......	1	1	......	......	....	......	4	5
Sprain of the wrist	......	4	3	1	......	....	......	7	11
Sprain of the fingers	......	2	1	1	......	....	......	1	3
Wound of the upper extremities	3	45	33	14	......	....	1	89	137
Fracture of the clavicle	......	4	3	1	......	....	......	2	6
Fracture of the scapula	......	......	......	......	......	....	......	1	1
Fracture of the radius	......	5	3	2	......	....	......	1	6
Fracture of the ulna	......	1	1	......	......	....	......	......	1
Fracture of both bones of forearm	1	3	3	1	......	....	......	......	4
Fracture of carpus, metacarpus, and phalanges	......	4	3	1	......	....	......	4	8
Dislocation of the scapula	......	......	......	......	......	....	......	1	1
Dislocation of the humerus	......	6	5	1	......	....	......	7	13

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

NORTH ATLANTIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Injuries—Continued.									
LOCAL INJURIES—Continued.									
Dislocation of the radius		2	2						2
Dislocation of the ulna								1	1
Dislocation of the radius and ulna		1					1		1
Dislocation of the carpus		1	1					1	2
Dislocation of the phalanges of fingers		1	1						1
Contusion of the lower extremities	1	27	22	5			1	29	57
Sprain of the hip		1		1				1	2
Sprain of the knee		3	3					3	6
Sprain of the ankle	2	10	6	5			1	12	24
Sprain of the foot								1	1
Wound of the lower extremities	1	17	14	3			1	13	31
Fracture of patella		4	2	2				2	6
Fracture of leg, both bones	1	8	5	2			2	2	11
Fracture of tibia alone		2		1	1				2
Fracture of fibula alone		5	4	1				2	7
Fracture of tarsus		1	1						1
Dislocation of the foot at the ankle								1	1
Dislocation of the metatarsus and phalanges		1	1					2	3
AMPUTATIONS								1	1
Amputation of fingers								1	1

MIDDLE ATLANTIC.

DISEASES.	Remaining under treatment from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
TOTAL CASES	**144**	**1,968**	**1,316**	**543**	**37**	**78**	**138**	**4,106**	**6,218**
General Diseases	**59**	**848**	**541**	**257**	**18**	**31**	**60**	**1,816**	**2,723**
Smallpox		1	1						1
Cow-pox		1		1					1
Chicken-pox		3	2	1					3
Measles	1	5	4	1			1		6
Epidemic rose rash		1	1						1
Typhus		1	1						1
Influenza		7	5	2				29	36
Mumps		1	1						1
Diphtheria		4	4						4
Enteric fever	3	43	40			2	4	2	48
Dysentery		23	19	3		1		9	32
Malarial intermittent fever	7	209	177	28	1	2	8	262	478
Malarial remittent fever		8	5			2	1	3	11
Malarial cachexia	1	6	3	3			1	23	30
Phagedæna	1						1		1
Erysipelas:									
Simple		14	14					4	18
Phlegmonous		1	1						1
Syphilis:									
Primary	5	60	45	17	1		2	25	90
Secondary	7	98	11	87	1		6	410	515
Gonorrhœa	1	39	19	17			4	503	543
Animal parasites		3	2	1				3	6
Scurvy		1		1				1	2
Alcoholism		17	15	2				14	31
Cleft palate								1	1
Debility		5	5					81	86
Rheumatic fever	3	35	27	5	1		5	9	47
Rheumatism	17	180	129	46	6	1	15	370	567
Gout								1	1
Osteo-arthritis	1	1		1			1		2
Cysts		2	1		1				2
Non-malignant new growth	1	5	6					9	15

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

MIDDLE ATLANTIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
General Diseases—Continued.									
Malignant new growth		2	1			1			2
Tubercle	11	67	1	40	5	21	11	49	127
Scrofula		1			1				1
Purpura		1				1			1
Anæmia		2	1	1				8	10
Diabetes mellitus		1			1				1
Local Diseases	**69**	**872**	**577**	**241**	**17**	**44**	**62**	**1,928**	**2,869**
Diseases of the Nervous System	6	42	19	16	1	3	9	68	116
Hemorrhage, cerebral	1	1					2		2
Inflammation of brain and its membranes		2				2			2
Neuritis		2	2						2
Sclerosis	1	2		2			1		3
Progressive muscular atrophy	1						1		1
Spastic spinal paralysis	1						1		1
Locomotor ataxia	2	2		1		1	2		4
Paralysis		1		1				1	2
Hemiplegia		3		2			1	1	4
Local paralysis		2		2					2
Glosso-labio-pharyngeal paralysis		1		1					1
Aphasia		1	1					1	2
Hyperæsthesia								1	1
Neuralgia		6	6					44	50
Facial		2	2					3	5
Sciatica		12	8	3			1	6	18
Vertigo								5	5
Epilepsy		5		4	1			6	11
Mental Diseases	1	5	2	2	1		1	1	7
Insanity	1			1					1
Mania		3	1	1	1				3
Melancholia		2	1				1		2
Dementia								1	1
Diseases of the Eye	1	13	7	7				31	45
Conjunctivitis		6	5	1				24	30
Pterygium		1		1					1
Ulcer of cornea		1		1					1
Iritis	1	3	2	2				6	10
Atrophy of optic disc or papilla		1		1					1
Opacity of vitrous		1		1					1
Stye								1	1
Diseases of the Ear		7	1	5	1			20	27
Inflammation of the external meatus, acute								5	5
Accumulation of wax								3	3
Inflammation of the middle ear		5	1	3	1			11	16
Obstruction of Eustachian tube		1		1					1
Deafness		1		1				1	2
Diseases of the Nose		1	1					40	41
Inflammation								1	1
Abscess		1	1					38	39
Necrosis								1	1
Diseases of the Circulatory System	2	42	2	33		3	6	40	84
Pericarditis		1		1					1
Valvular disease:									
Aortic	1	14		13		1	1	3	18
Mitral	1	21	2	15		2	3	25	47
Hypertrophy of heart								2	2
Angina pectoris		1		1				1	2
Palpitation and irregular action of heart		3		2			1	5	8

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

MIDDLE ATLANTIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE CIRCULATORY SYSTEM—Continued.									
Aneurism of arteries		1					1		1
Varix		1		1				4	5
DISEASES OF THE RESPIRATORY SYSTEM	10	184	96	55	8	23	12	437	631
Laryngitis:									
Acute		6	5				1	11	17
Chronic		1					1		1
Bronchitis:									
Acute	2	51	44	5	2		2	346	399
Chronic	1	35	8	23	2		3	45	81
Catarrhal								1	1
Spasmodic asthma		7	1	5		1		8	15
Pneumonia		38	21			15	2		38
Pneumonic phthisis, chronic	4	18	1	9	3	7	2	7	29
Emphysema		4		4				1	5
Hydrothorax		1			1				1
Pleurisy:									
Acute	2	16	15	3				12	30
Chronic		7		6			1	6	13
Empyema	1		1						1
DISEASES OF THE DIGESTIVE SYSTEM	7	159	118	28	1	6	13	518	684
Ulcer of the lips								1	1
Stomatitis		1	1					1	2
Abscess of the antrum								1	1
Caries of dentine and cementum								3	3
Abscess of dental periosteum		1					1	2	3
Inflammation of gums and alveoli								1	1
Ulceration of gums and alveoli								1	1
Toothache								1	1
Abscess of the tongue		1	1						1
Hypertrophy of tonsils								1	1
Elongated uvula								1	1
Sore throat		3	2	1				13	16
Quinsy								1	1
Follicular tonsilitis	1	19	19	1				32	52
Salivation		1	1						1
Follicular inflammation of pharynx		6	6					40	46
Inflammation of the stomach	1	14	8	4		3		8	23
Ulceration of the stomach		2		2				1	3
Dyspepsia	1	10	8	3				97	108
Inflammation of the intestines:									
Catarrhal		3	3					40	43
Ulcerative		4	2	1			1	5	9
Hernia		11	5	5			1	110	121
Diarrhœa	1	33	29	2		1	2	75	109
Constipation	1	6	6				1	45	52
Colic		1	1						1
Piles:									
Internal		9	5	4				8	17
External	1	10	8	2			1	18	29
Prolapsus of the rectum	1	1	1				1		2
Fistula in ano		8	5	1			2	3	11
Pruritus ani								1	1
Conjestion of the liver		3	1	1			1	5	8
Hepatitis		1	1						1
Cirrhosis of liver		3			1	1	1		3
Jaundice		4	3				1	3	7
Inflammation of hepatic ducts and gall-bladder		1	1						1
Ascites		1		1					1
Peritonitis		2	1			1			2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

MIDDLE ATLANTIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE LYMPHATIC SYSTEM	7	98	87	15			3	92	197
Congestion of the spleen		2	2					1	3
Hypertrophy of lymph glands								1	1
Inflammation of lymph vessels		1	1						1
Inflammation of lymph glands	6	59	53	9			3	75	140
Suppuration of lymph glands	1	36	31	6				15	52
DISEASES OF THE THYROID BODY		1	1						1
Goitre		1	1						1
DISEASES OF THE URINARY SYSTEM	3	37	13	18		5	4	43	83
Congestion of kidney		1					1		1
Acute nephritis	1	1	2					1	3
Bright's disease	2	16	1	10		4	3	9	27
Abscess of kidney		2		2					2
Calculus in ureter		1	1						1
Hæmaturia		4	3	1				1	5
Inflammation of bladder:									
Acute		8	5	3				21	29
Subacute								1	1
Chronic		1		1				3	4
Calculus of bladder		1		1					1
Retention of urine		2	1			1		1	3
Incontinence of urine								6	6
DISEASES OF THE GENERATIVE SYSTEM	10	132	94	38	4	3	3	306	448
Urethritis								12	12
Gleet								14	14
Stricture of urethra:									
Organic	1	26	13	11	1	2		31	58
Spasmodic								1	1
Urinary fistula		1	1						1
Hypertrophy of prostate gland								1	1
Acute inflammation of prostate gland								12	12
Inflammation of glans penis	1	5	5	1				6	12
Abscess of penis		1	1						1
Ulcer of penis	4	54	40	15		1	2	158	216
Phimosis		4	4					3	7
Paraphimosis	1	1	2					1	3
Varicocele		1		1				11	12
Hydrocele of tunica vaginalis	1	10	4	5	2			7	18
Orchitis:									
Acute	1	16	11	5	1			20	37
Chronic								3	3
Epididymitis	1	13	13				1	20	34
Spermatorrhœa								2	2
Impotence								3	3
Leucorrhœa								1	1
DISEASES OF THE ORGANS OF LOCOMOTION	5	29	23	7			4	14	48
Periostitis	1	6	6	1				1	8
Necrosis		3	1	1			1		3
Synovitis:									
Acute	2	5	5	1			1	3	2
Chronic		1	1					1	2
Ankylosis	1	2		2			1		2
Caries and necrosis of spine		1					1		2
Posterior curvature of spine	1			1					1
Inflammation of muscles								2	11
Inflammation of tendons		1	1					1	10
Contraction of tendons and fasciæ		1	1					1	2
Inflamed bursa		8	7	1				4	3
Bursal abscess		1	1						1
Bunion								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

MIDDLE ATLANTIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE CONNECTIVE TISSUE	4	45	41	5		1	2	57	106
Œdema		1	1					1	2
Inflammation		12	9	1		1	1	24	36
Abscess	4	32	31	4			1	32	68
DISEASES OF THE SKIN	12	77	71	12	1		5	237	326
Erythema								3	3
Urticaria								3	3
Eczema		2	1	1				45	47
Intertrigo								1	1
Lichen								1	1
Psoriasis	1			1				9	10
Herpes		1	1					8	9
Zona		3	3					3	6
Sycosis	1			1					1
Frostbite	2	19	19	1			1	17	38
Ulcer	7	38	35	7	1		2	96	141
Boil		4	3				1	36	40
Carbuncle		3	2				1	2	5
Whitlow	1	7	7	1				8	16
Onychia								1	1
Lupus								1	1
Pruritus								3	3
PARASITIC DISEASES OF THE SKIN	1		1					24	25
Ringworm	1		1					5	6
Itch								18	18
Phthiriasis								1	1
Poisons		**8**	**6**	**2**				**1**	**9**
Metals and their salts		6	5	1				1	7
Vegetable poisons		2	1	1					2
Injuries	**16**	**240**	**192**	**43**	**2**	**3**	**16**	**361**	**617**
GENERAL INJURIES		32	28	2	1		1	47	79
Burns and scalds		21	18	2			1	21	42
Effects of cold		6	6					26	32
Heat-stroke		5	4		1				5
LOCAL INJURIES	16	208	164	41	1	3	15	314	538
Wound of glands								2	2
Strain of muscles	1	4	4	1				5	10
Wound of gland								4	4
Contusion of scalp								2	2
Scalp wound:									
Bone not exposed		3	3					5	8
Bone exposed		2	1				1		2
Fracture of the vault of the skull		2	1			1			2
Compression of brain		1				1			1
Contusion of face		3	2				1	3	6
Wound of face and mouth	1	7	8					10	18
Fracture of facial bones		3	2	1				1	4
Contusion of the eye								3	3
Foreign body in cornea or conjunctiva								6	6
Contusion of the chest		7	6	1				12	19
Fracture of the ribs		10	7	2			1	7	17
Contusion of back		11	10				1	8	19
Sprain of back		6	6					10	16
Wound of back		1	1					1	2
Wound of the urethra, perineum, scrotum, and penis		1	1					4	5
Wound of anus								1	1
Contusion of testicle		1	1					3	4

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

MIDDLE ATLANTIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Injuries—Continued.									
LOCAL INJURIES—Continued.									
Contusion of upper extremities	1	9	7	2			1	37	47
Sprain of the shoulder	1	8	4	5				6	15
Sprain of the elbow		1	1					2	3
Sprain of the wrist		7	4	2			1	23	30
Sprain of the fingers								2	2
Wound of the upper extremities	2	29	23	7		1		66	97
Fracture of the clavicle	1	3	2	2				1	5
Fracture of the humerus		1		1				1	2
Fracture of the radius		3	1	1	1			2	5
Fracture of both bones of forearm		8	6	1			1	4	12
Fracture of carpus, metacarpus, and phalanges		2	2					5	7
Dislocation of the clavicle								1	1
Dislocation of the humerus		6	4	2					6
Contusion of the lower extremities	2	13	12				3	24	39
Sprain of the hip		1	1						1
Sprain of the knee		6	5	1					6
Sprain of the ankle	2	19	15	6				19	40
Wound of the lower extremities	3	16	13	4			2	33	52
Wound of joint, lower extremities		1		1				1	2
Fracture of femur		2	1				1		2
Fracture of patella		1	1						1
Fracture of leg, both bones	1	2	3						3
Fracture of tibia alone	1	1	1	1					2
Fracture of fibula alone		3	2				1		3
Fracture of tarsus		2	1				1		2
Fracture of phalanges of toes		1	1						1
Dislocation of the metatarsus and phalanges		1	1						1

SOUTH ATLANTIC.

TOTAL CASES	**137**	**1999**	**1320**	**566**	**41**	**72**	**137**	**6727**	**8863**
General Diseases	**61**	**1030**	**688**	**296**	**18**	**33**	**56**	**2961**	**4052**
Smallpox								1	1
Cowpox								2	2
Measles		16	14				2	8	24
Influenza		14	14					45	59
Whooping-cough	1		1						1
Mumps	1	3	3	1				4	8
Diphtheria		1	1						1
Simple continued fever		2	2					2	4
Enteric fever	1	34	23	2		7	3	4	39
Typho-malarial fever		5	3	1		1			5
Sporadic cholera		2			1		1	3	5
Dysentery	3	42	31	6		3	5	61	106
Malarial intermittent fever	10	225	210	13		2	10	595	830
Malarial remittent fever	4	134	117	10	3	4	4	79	217
Malarial cachexia	1	15	11	5				111	127
Beri-Beri		2	2						2
Erysipelas:									
Simple		14	10	4				12	26
Phlegmonous	1	1	2						2
Syphilis:									
Primary	4	63	36	29	1		1	87	154
Secondary	8	129	15	112	2		8	402	539
Gonorrhœa	1	34	23	8	1		3	687	722
Animal parasites		1	1					1	2
Alcoholism		13	11			1	1	11	24

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

SOUTH ATLANTIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved				
General Diseases—Continued.									
Debility		6	3	2			1	101	107
Rheumatic fever		34	17	14			3	21	55
Rheumatism	14	170	131	44	2	1	6	645	829
Gout								2	2
Nonmalignant new growth	1	4	2	3				30	35
Malignant new growth		2			1		1		2
Tubercle	11	60	4	41	5	14	7	40	111
Scrofula		1	1					2	3
Anæmia								4	4
Diabetes mellitus		3		1	2			1	4
Local Diseases	**69**	**729**	**471**	**206**	**21**	**35**	**65**	**3310**	**4108**
DISEASES OF THE NERVOUS SYSTEM	**8**	**42**	**18**	**16**		**6**	**10**	**189**	**239**
Congestion of cerebrum		2	2					1	3
Congestion of spinal cord								1	1
Inflammation of cerebral membranes		2				2			2
Spinal meningitis		1				1			1
Myelitis	2	2		1		1	2	1	5
Neuritis		1					1	1	2
Locomotor ataxy	1	1		2		1		5	7
Apoplexy		1							1
Hemiplegia	3	4		2		1	4	2	9
Paraplegia	2						2		2
Local paralysis		1	1					3	4
Anæsthesia								1	1
Wry-neck								1	1
Hyperæsthesia								1	1
Neuralgia		6	4	2				109	115
Facial		4	4					27	31
Sciatica		7	4	3				7	14
Vertigo		5	2	2			1	6	11
Megrim								12	12
Epilepsy		5	1	4				8	13
Chorea								1	1
Hysteria								2	2
MENTAL DISEASES	25	10	5	2	2	1	25	3	38
Hypochondriasis		1	1					2	3
Insanity		1			1				1
Mania	11	4	3			1	11	1	16
Melancholia	11	1	1	1	1		9		12
Dementia	2	2		1			3		4
General paralysis of the insane	1	1					2		2
DISEASES OF THE EYE	2	9	3	5	2		1	67	78
Conjunctivitis		2	2					44	46
Keratitis		1	1					2	3
Ulcer of cornea								2	2
Opacity of cornea		1		1				2	3
Inflammation of the sclerotic								1	1
Iritis		3		2	1			2	5
Choroiditis	1				1				1
Cataract	1						1		1
Panophthalmitis		1		1					1
Ametropia								2	2
Night-blindness								2	2
Day-blindness								2	2
Blepharitis								1	1
Stye		1		1				3	4
Abscess of eyelid								2	2
Chalazion								2	2
DISEASES OF THE EAR		4	1	3				28	32
Inflammation of the external meatus, acute		1		1				8	9

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

SOUTH ATLANTIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE EAR—Continued.									
Abscess of the external meatus		1	1					1	2
Accumulation of wax								9	9
Inflammation of the middle ear		2		2				7	9
Deafness								3	3
DISEASES OF THE NOSE		1				1		41	42
Epistaxis								1	1
Nasal catarrh								36	36
Ulceration								4	4
Caries		1				1			1
DISEASES OF THE CIRCULATORY SYSTEM	1	26	1	14	1	9	2	74	101
Hydropericardium								5	5
Pericarditis		1		1				1	2
Valvular disease:									
Aortic		4		1		3		9	13
Mitral	1	17		12		5	1	28	46
Hypertrophy of heart								3	3
Dilatation of heart		2			1		1		2
Syncope								1	1
Palpitation and irregular action of heart								12	12
Aneurism of arteries		1				1		7	8
Phlebitis		1	1						1
Varix								8	8
DISEASES OF THE RESPIRATORY SYSTEM	2	102	64	24	3	9	4	690	794
Hay-asthma								1	1
Laryngitis:									
Acute								10	10
Chronic								4	4
Catarrhal								3	3
Bronchitis:									
Acute		38	32	5		1		577	615
Chronic		6		6				44	50
Catarrhal		1		1				15	16
Spasmodic asthma		6		5		1		15	21
Passive congestion of lung		1	1						1
Hemorrhage of lung		1		1				3	4
Pneumonia		24	17	2		5		2	26
Pneumonic phthisis:									
Acute		8	5	1		1	1	1	9
Chronic	1	7		2	3	1	2	2	10
Emphysema								1	1
Pleurisy:									
Acute		7	7					9	16
Chronic	1	2	2	1				3	6
Empyema		1					1		1
DISEASES OF THE DIGESTIVE SYSTEM	5	135	91	36	5	5	3	1,105	1,245
Fissure of the lips								1	1
Stomatitis								11	11
Caries of dentine and cementum								47	47
Necrosis of dentine and cementum								1	1
Abscess of dental periosteum	1			1				2	3
Inflammation of gums and alveoli		2	2					3	5
Ulceration of gums and alveoli								1	1
Toothache								10	10
Inflammation of the tongue	1		1					2	3
Ulcer of the tongue								1	1
Hypertrophy of tonsils								1	1
Elongated uvula								1	1
Sore throat		2	2					74	76
Quinsy		7	5	2				7	14

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

SOUTH ATLANTIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE DIGESTIVE SYSTEM—Continued.									
Follicular tonsilitis		8	5	3				37	45
Ulceration of fauces								1	1
Salivation		1	1					3	4
Follicular inflammation of the pharynx		1	1					27	28
Hemorrhage of the stomach								1	1
Inflammation of the stomach		11	11					23	34
Dyspepsia		11	4	7				254	265
Gastrodynia								7	7
Vomiting								1	1
Inflammation of the intestines:									
Catarrhal		1	1					6	7
Ulcerative		3	1	2				7	10
Tympanitis		1	1						1
Obstruction of the intestines		2	2						2
Hernia		8	2	4	1	1		96	104
Fistula of intestines		1		1					1
Diarrhea	2	45	35	8	2	1	1	218	265
Constipation		2	2					152	154
Colic		3	3					22	25
Abscess of the rectum		2	2						2
Ulceration of the rectum								1	1
Ulceration of the anus								2	2
Piles:									
Internal		3	1	2				19	22
External		6	3	1	1		1	27	33
Stricture of the rectum		1	1						1
Fistula in ano		4	2	2				9	13
Pruritus ani								6	6
Atrophy of the liver		1				1			1
Congestion of the liver		1		1				4	5
Hepatitis	1	1	1				1	10	12
Jaundice		5	2	2	1			2	7
Inflammation of hepatic ducts and gall-bladder								6	2
Ascites								2	6
Peritonitis		2				2			2
DISEASES OF THE LYMPHATIC SYSTEM	4	80	60	17	2		5	110	194
Congestion of the spleen								1	1
Hypertrophy of lymph-glands		1		1				1	2
Inflammation of lymph-vessels								1	1
Inflammation of lymph-glands	4	40	33	6	1		4	87	131
Suppuration of lymph glands		39	27	10	1		1	20	59
DISEASES OF THE URINARY SYSTEM	5	21	8	14		3	1	91	117
Congestion of kidney								1	1
Acute nephritis		3		3				8	11
Bright's disease	2	8	1	7		1	1	15	25
Calculus in kidney								1	1
Calculus in ureter		2	2					3	5
Hematuria		1	1					6	7
Lithuria								2	2
Phosphuria		1		1					1
Inflammation of bladder:									
Acute		3	1	2				32	35
Subacute								9	9
Chronic	3			1		2		3	6
Irritability of bladder								1	1
Retention of urine								7	7
Incontinence of urine		3	3					3	6
DISEASES OF THE GENERATIVE SYSTEM	4	154	104	42	5	1	6	377	531
Urethritis								11	15
Gleet		1		1				26	27

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

SOUTH ATLANTIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE GENERATIVE SYSTEM—Continued.									
Stricture of urethra:									
Organic	2	25	10	13	2	1	1	38	65
Spasmodic		2	2						2
Urinary fistula	1	1		2					2
Hypertrophy of prostate gland		1		1				2	3
Acute inflammation of prostate gland		1	1					1	2
Œdema of the penis		2	2					1	3
Inflammation of the penis		1	1					1	2
Inflammation of glans penis		1	1					7	8
Ulcer of penis		62	44	14	1		3	216	278
Phimosis		9	5	2	1		1	3	12
Paraphimosis		7	6	1				4	11
Abscess of the scrotum								3	3
Hydrocele of spermatic cord								1	1
Inflammation of spermatic cord								1	1
Varicocele		1	1					7	8
Hydrocele of tunica vaginalis	1	1	2					11	13
Orchitis:									
acute		30	25	5				35	65
chronic								1	1
Epididymitis		6	3	1	1		1	3	9
Abscess of testicle		1		1					1
Spermatorrhea								5	5
Inflammation of the ovary		1		1					1
Menorrhagia		1	1						1
DISEASES OF THE ORGANS OF LOCOMOTION	3	18	13	5			3	42	63
Ostitis	1	1	1				1	1	3
Periostitis	1		1					2	3
Caries		1	1				1		1
Necrosis		1						2	3
Dropsy of joints								2	2
Synovitis, acute	1	10	8	3				7	18
Ankylosis		2		1			1	1	3
Lateral curvature of spine								2	2
Inflammation of muscles								19	19
Abscess of muscles		1		1					1
Inflammation of tendons		1	1						1
Contraction of tendons and fasciæ								1	1
Inflamed bursa								2	2
Thecal abscess		1	1						1
Ganglion								3	3
DISEASES OF THE CONNECTIVE TISSUE	4	29	26	6			1	66	99
Œdema		2		2				5	7
Inflammation	1	1	1	1				10	12
Abscess	3	26	25	3			1	51	80
DISEASES OF THE SKIN	6	94	73	22	1		4	357	457
Erythema		1	1					4	5
Urticaria								8	8
Eczema		8	6	2				65	73
Intertrigo								1	1
Ecthyma								2	2
Pityriasis								2	2
Prurigo								6	6
Lichen								7	7
Psoriasis								2	2
Herpes								13	13
Zona		1					1	3	4
Pemphigus								3	3
Acne								2	2
Sycosis		2	1	1				5	7
Chilblain		1	1					4	5

Table VII.—Tabular Statement, by Districts, of Diseases and Injuries Treated during the Year ended June 30, 1893—Continued.

SOUTH ATLANTIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE SKIN—Continued.									
Frost-bite	1	16	12	4	......	....	1	13	30
Ulcer	4	24	16	11	......	....	1	96	124
Cicatrices	......	......	......	......	......	....	......	1	1
Fissures	......	......	......	......	......	....	......	4	4
Boil	......	11	9	2	......	....	......	71	82
Carbuncle	......	8	7	......	1	....	......	12	20
Whitlow	1	18	17	1	......	....	1	22	41
Onychia	......	3	2	1	......	....	......	2	5
Corn	......	......	......	......	......	....	......	1	1
Lupus	......	......	......	......	......	....	......	2	2
Wen	......	1	1	......	......	....	......	2	3
Pruritus	......	......	......	......	......	....	......	4	4
PARASITIC DISEASES OF THE SKIN	......	4	4	......	......	....	......	70	74
Ringworm	......	......	......	......	......	....	......	7	7
Itch	......	......	......	......	......	....	......	55	55
Phthiriasis	......	......	......	......	......	....	......	8	8
Unclassified	......	4	4	......	......	....	......	......	4
Poisons	......	2	2	......	......	....	......	4	6
Organic substances	......	1	1	......	......	....	......	......	1
Vegetable poisons	......	1	1	......	......	....	......	4	5
POISONED WOUNDS	......	1	1	......	......	....	......	......	1
Venomous animals	......	1	1	......	......	....	......	......	1
Injuries	**7**	**237**	**158**	**64**	**2**	**4**	**16**	**452**	**696**
GENERAL INJURIES	......	32	24	8	......	....	......	42	74
Burns and scalds	......	24	17	7	......	....	......	22	46
Effects of cold	......	1	1	......	......	....	......	19	20
Lightning stroke	......	......	......	......	......	....	......	1	1
Heat stroke	......	4	4	......	......	....	......	......	4
Multiple injury	......	1	......	1	......	....	......	......	1
Exhaustion	......	2	2	......	......	....	......	......	2
LOCAL INJURIES	7	205	134	56	2	4	16	410	622
Wound of nerve	......	1	......	1	......	....	......	......	1
Strain of muscles	1	4	1	3	......	....	1	21	26
Abrasion of skin	......	1	......	1	......	....	......	6	7
Foreign body in subcutaneous tissue	......	......	......	......	......	....	......	5	5
Contusion of scalp	......	3	3	......	......	....	......	3	6
Scalp wound:									
Bone not exposed	......	8	7	1	......	....	......	12	20
Bone exposed	......	2	......	1	......	1	......	1	3
Contusion of skull	......	......	......	......	......	....	......	1	1
Fracture of the vault of the skull	......	3	1	......	......	1	1	......	3
Contusion of face	1	2	1	1	......	1	......	3	6
Wound of face and mouth	......	7	6	1	......	....	......	16	23
Fracture of facial bones	......	3	3	......	......	....	......	......	3
Contusion of the eye	1	1	......	2	......	....	......	1	3
Foreign body in cornea or conjunctiva	......	......	......	......	......	....	......	11	11
Wound of eyelid	......	......	......	......	......	....	......	3	3
Wound of the sclerotic	......	1	1	......	......	....	......	......	1
Wound of the cornea	......	......	......	......	......	....	......	2	2
Contusion of pinna	......	......	......	......	......	....	......	1	1
Rupture of membrana tympani	......	......	......	......	......	....	......	2	2
Wound of neck	......	1	1	......	......	....	......	......	1
Contusion of the chest	1	2	3	......	......	....	......	15	18
Fracture of the ribs	......	11	5	6	......	....	......	6	17
Wound of parietes of chest	......	3	3	......	......	....	......	3	6
Contusion of back	......	5	3	2	......	....	......	12	17
Sprain of back	......	4	2	1	......	....	1	13	17

Table VII.—Tabular Statement, by Districts, of Diseases and Injuries Treated during the Year ended June 30, 1893—Continued.

SOUTH ATLANTIC—Continued.

DISEASES	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Injuries—Continued.									
LOCAL INJURIES—Continued.									
Wound of back		5	5						5
Contusion of abdomen		1	1					1	2
Contusion of the pelvis								2	2
Contusion of the urethra, perineum, scrotum, and penis		1	1					1	2
Wound of the urethra, perineum, scrotum, and penis		3	1	2					3
Rupture of urethra		1		1					1
Contusion of testicle								1	1
Contusion of upper extremities		8	6	2				31	39
Sprain of the shoulder								2	2
Sprain of tne elbow								5	5
Sprain of the wrist		1					1	18	19
Sprain of the fingers		1		1				5	6
Wound of the upper extremities		52	38	12	1		1	124	176
Fracture of the clavicle		1	1						1
Fracture of the radius		1	1						1
Fracture of the ulna	1		1					1	2
Fracture of both bones of forearm		7	3	1	1		2		7
Fracture of carpus, metacarpus, and phalanges		5	1	4				7	12
Dislocation of the clavicle		1		1					1
Dislocation of the humerus		5	5						5
Dislocation of the phalanges of thumb		1	1						1
Dislocation of the phalanges of fingers								1	1
Contusion of the lower extremities		14	7	5		1	1	24	38
Sprain of the kneo		1	1					2	3
Sprain of the ankle		15	7	4			4	19	34
Sprain of the foot								4	4
Wound of the lower extremities	1	5	5	1				25	31
Wound of joint, lower extremities		1		1					1
Fracture of leg, both bones	1	7	4	1			3		8
Fracture of tibia alone		3	2				1		3
Fracture of fibula alone		3	3						3

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TOTAL CASES	63	1,274	778	424	24	44	67	3,876	5,213
General Diseases	26	701	426	243	9	18	31	1,761	2,488
Cowpox								154	154
Influenza		26	17	8		1		39	65
Mumps		1	1						1
Diphtheria		1				1			1
Simple continued fever		3	1	2				1	4
Enteric fever	2	5	4	2		1			7
Typho-malarial fever		1					1		1
Sporadic cholera								1	1
Dysentery		43	37	2		3	1	20	63
Malarial intermittent fever	6	180	163	13	1	1	8	397	583
Malarial remittent fever		74	68	4		1	1	68	142
Malarial cachexia		9	7	2				41	50
Phagedæna	1					1			1
Erysipelas, simple		2	1				1	5	7
Syphilis:									
Primary	1	69	17	48	3		2	79	149
Secondary	7	114	6	105	1	1	8	284	405
Gonorrhœa	4	43	36	11				287	334
Animal parasites								6	6
Effects of excessive venery								4	4
Scurvy								2	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE GULF—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
General Diseases—Continued.									
Alcoholism		7	5	1			1	4	11
Effects of chemical agents								1	1
Debility		2		1			1	40	42
Rheumatic fever		8	8					7	15
Rheumatism	3	77	50	24		1	5	289	369
Gout								4	4
Nonmalignant new growth		2	1	1				8	10
Malignant new growth		2		2					2
Tubercle	2	25		14	4	7	2	9	36
Scrofula								3	3
Anæmia		7	4	3				7	14
Diabetes mellitus								1	1
Local Diseases	**27**	**415**	**240**	**137**	**14**	**23**	**28**	**1,800**	**2,242**
DISEASES OF THE NERVOUS SYSTEM	5	22	17	4	2	3	1	118	145
Spinal meningitis		1					1		1
Locomotor ataxy	2	1		1	1	1			3
Paralysis								1	1
Hemiplegia	1	1				2			2
Paraplegia								1	1
Local paralysis								2	2
Toxic paralysis	1				1				1
Anæsthesia								2	2
Spasm of muscle		1	1					3	4
Hyperæsthesia								3	3
Neuralgia		9	8	1				59	68
Facial		2	2					17	19
Sciatica	1	6	1	1				6	13
Vertigo								1	1
Megrim								18	18
Metanus		1		1					1
Epilepsy								3	3
Chorea								1	1
Hysteria								1	1
MENTAL DISEASES	4	3	2	2		1	2	2	9
Hypochondriasis								2	2
Insanity	1	1		1			1		2
Mania	1						1		1
Melancholia		1	1						1
Dementia	2			1		1			2
Toxic insanity		1	1						1
DISEASES OF THE EYE		11	3	4	1		3	47	58
Conjunctivitis		2		2				33	35
Keratitis		4	2	1			1	4	8
Ulcer of cornea		1		1					1
Iritis		1	1					4	5
Synechia								1	1
Cataract		2			1		1	1	3
Panophthalmitis		1					1		1
Night-blindness								2	2
Blepharitis								1	1
Stye								1	1
DISEASES OF THE EAR		2	1	1				16	18
Abscess of the external meatus								1	1
Subaceous cyst								1	1
Accumulation of wax								5	5
Inflammation of the middle ear		2	1	1				6	8
Ulceration of membrana tympani								3	3
DISEASES OF THE NOSE		1		1				22	23
Epistaxis								1	1
Inflammation								5	5

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE GULF—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE NOSE—Continued.									
Nasal catarrh		1		1				15	16
Ozæna								1	1
DISEASES OF THE CIRCULATORY SYSTEM	1	17	1	11		5	1	33	51
Pericarditis		1		1					1
Endocarditis		1				1			1
Valvular disease:									
Aortic	1	5	1	5				3	9
Mitral		7		4		3		14	21
Hypertrophy of heart								1	1
Dilatation of heart								1	1
Palipitation and irregular action of heart								10	10
Aneurism of arteries		3		1		1	1	1	4
Phlebitis								1	1
Varix								2	2
DISEASES OF THE RESPIRATORY SYSTEM		55	34	12	1	8		327	382
Laryngitis, acute		1	1					2	3
Bronchitis:									
Acute		13	9	2		2		222	235
Chronic		5	2	1		2		64	69
Catarrhal		6	4	2				20	26
Spasmodic asthma		3	1	2				6	9
Hemorrhage of lung		1		1				3	4
Pneumonia		16	10	3		3		1	17
Pleurisy:									
Acute		9	6	1	1	1		2	11
Chronic		1	1					7	8
DISEASES OF THE DIGESTIVE SYSTEM	7	70	47	23	1		6	663	740
Stomatitis		1	1					7	8
Caries of dentine and cementum								28	28
Necrosis of dentine and cementum								2	2
Abcess of dental periosteum								2	2
Inflammation of gums and alveoli								1	1
Toothache								15	15
Ulcer of the tongue								1	1
Sore throat								24	24
Quinsy		2	1	1				3	5
Follicular tonsilitis		1	1					10	11
Salivation	1		1					2	3
Follicular inflammation of the pharynx								15	15
Inflammation of the stomach		4	2	1	1			4	8
Dilatation of the stomach		1		1				1	2
Dyspepsia		1					1	137	138
Gastrodynia								1	1
Inflammation of the intestines:									
Catarrhal	1		1					7	8
Ulcerative	1	2	3					1	4
Hernia		3	1	2				78	81
Diarrhea	4	23	22	4			1	105	132
Constipation		1		1				155	156
Colic		2	2					17	19
Abscess of the rectum		1		1					1
Ulceration of the anus		1	1						1
Piles:									
Internal		4	2	2				7	11
External		5	1	3			1	18	23
Prolapsus of the rectum		2		1			1		2
Fistula in ano		5	2	1			2		5
Congestion of the liver		2	2					8	10
Hepatitis		2	1	1					2
Cirrhosis of liver		1		1					1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE GULF—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE DIGESTIVE SYSTEM—Continued.									
Jaundice		4	2	2				9	13
Inflammation of hepatic ducts and gall-bladder								1	1
Gallstones		1	1					2	3
Ascites		1		1					1
Peritonitis								2	2
DISEASES OF THE LYMPHATIC SYSMEM	2	16	15	2			1	54	72
Hypertrophy of the spleen								1	1
Congestion of the spleen								1	1
Inflammation of lymph glands	2	13	13	2				42	57
Suppuration of lymph-glands		3	2				1	10	13
DISEASES OF THE URINARY SYSTEM	1	23	5	11	3	4	1	32	56
Acute nephritis		9	3	3	1	1	1	1	10
Bright's disease	1	11		7	2	3		7	19
Diabetes insipidus								1	1
Hæmaturia								1	1
Inflammation of bladder:									
Acute								4	4
Sub-acute		1	1						1
Chronic								5	5
Irritability of bladder								13	13
Retention of urine		1	1						1
Incontinence of urine		1		1					1
DISEASES OF THE GENERATIVE SYSTEM	6	109	64	38	1	2	10	220	335
Urethritis		1	1					2	3
Gleet								3	3
Lacunar abscess		1		1					1
Stricture of urethra:									
Organic		24	16	5	1	1	1	21	45
Spasmodic								2	2
Hypertrophy of prostate gland								2	2
Acute inflammation of prostate gland								2	2
Chronic inflammation of prostate gland								1	1
Inflammation of glans penis								2	2
Ulcer of penis	6	68	39	28			7	143	217
Paraphimosis		1	1						1
Chordee								1	1
Inflammation of the scrotum		1					1		1
Inflammation of spermatic cord								2	2
Varicocele								9	9
Hydrocele of tunica vaginalis		1		1				1	2
Orchitis:									
Acute		7	5	1		1		16	23
Chronic								4	4
Epididymitis		3	2				1	4	7
Abscess of testicle		1		1				1	2
Cyst of testicle		1		1					1
Spermatorrhœa								4	4
DISEASES OF THE ORGANS OF LOCOMOTION		7	4	3				8	15
Periostitis		2		2				1	3
Caries		2	2						2
Synovitis:									
Acute		1	1					1	2
Chronic								1	1
Dislocation of articular cartilage								1	1
Psoas, lumbar, and other abscesses		1		1					1
Inflamed bursa								1	1
Thecal abscess		1	1					2	3
Bursal tumor								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE GULF—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensaay.
			Recovery.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE CONNECTIVE TISSUE		25	19	4	1		1	24	49
Inflammation		5	3		1		1	5	10
Abscess		20	16	4				19	39
DISEASES OF THE SKIN	1	49	27	21			2	210	260
Urticaria								12	12
Eczema		1		1				37	38
Intertrigo								1	1
Impetigo		1		1					1
Ecthyma								2	2
Pityriasis								1	1
Prurigo								4	4
Lichen								3	3
Psoriasis								2	2
Miliaria								2	2
Herpes								6	6
Zona								2	2
Acne								2	2
Sycosis								3	3
Chilblain								4	4
Frostbite								10	10
Ulcer	1	31	15	16			1	68	100
Fissures								3	3
Boil		5	5					24	29
Carbuncle		2	2					6	8
Whitlow		8	5	3				14	22
Onychia								3	3
Corn								1	1
Lupus		1					1		1
PARASITIC DISEASES OF THE SKIN		5	1		4			24	29
Ringworm								11	11
Tinea versicolor								2	2
Itch		1	1					11	12
Unclassified		4			4				4
Poisons								4	4
Iodine								1	1
Organic substances								1	1
Vegetable poisons								2	2
POISONED WOUNDS								3	3
Venomous animals								1	1
Vegetable substances								2	2
Injuries	**10**	**158**	**112**	**44**	**1**	**3**	**8**	**308**	**476**
GENERAL INJURIES		8	7			1		12	20
Burns and scalds		5	4			1		9	14
Heat stroke		3	3					3	6
LOCAL INJURIES	10	150	105	44	1	2	8	296	456
Contusion of nerves								2	2
Wound of arteries								3	3
Strain of muscles		1	1					9	10
Abrasion of skin								2	2
Foreign body in subcutaneous tissue		1	1						1
Contusion of scalp								1	1
Scalp wound:									
Bone not exposed	1	4	3	2				9	14
Bone exposed		1		1				7	8
Fracture of the vault of the skull		1				1			1
Contusion of face		1	1					4	5
Wound of face and mouth	1	4	3	2				6	11

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE GULF—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Injuries—Continued.									
LOCAL INJURIES—Continued.									
Fracture of facial bones		3	1	2					3
Contusion of the eye								3	3
Foreign body in cornea or conjunctiva								8	8
Wound of the cornea		1	1						1
Contusion of pinna		2		2					2
Wound of pina								2	2
Foreign body in external meatus								1	1
Wound of neck		1	1						1
Contusion of the chest		9	7	1			1	14	23
Fracture of the ribs		6	1	3	1		1	6	12
Wound of parieties of chest		3	1	2				2	5
Penetrating wound of pleura or lung		1	1						1
Contusion of back		5	2	3				7	12
Sprain of back		6	5	1				19	25
Concussion of cord		1	1						1
Contusion of abdomen		1	1					5	6
Wound of parieties of abdomen	1	1	1	1				1	3
Contusion of the pelvis		1		1					1
Foreign body in the rectum		1	1						1
Contusion of testicle		1	1					2	3
Contusion of upper extremities	1	5	5	1				25	31
Sprain of the shoulder		1	1					12	13
Sprain of the wrist		3	3					5	8
Sprain of the fingers								1	1
Wound of the upper extremities	1	17	14	4				63	81
Fracture of the clavicle		2	1	1				2	4
Fracture of the humerus		1					1		1
Fracture of the radius		1	1					4	5
Fracture of the ulna		2	2					1	3
Fracture of both bones of forearm	1	5	2	2		1	1		6
Fracture of carpus, metacarpus, and phalanges	1	1	1	1				7	9
Dislocation of the clavicle	1		1						1
Dislocation of the humerus		1	1					1	2
Dislocation of the phalanges of thumb								1	1
Contusion of the lower extremities		12	9	2			1	22	34
Sprain of the hip								4	4
Sprain of the knee		3	3					8	11
Sprain of the ankle		3	1	1			1	7	10
Sprain of the foot		1		1				1	2
Wound of the lower extremities		29	22	6			1	19	48
Wound of joint, lower extremities		1	1						1
Fracture of femur	1		1						1
Fracture of patella		2		1			1		2
Fracture of leg, both bones		2		2					2
Fracture of fibula alone	1		1						1
Fracture of tarsus		1	1						1
Dislocation of the knee		1		1					1

THE OHIO.

DISEASES.	Remaining under treatment from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
TOTAL CASES	52	1,342	895	355	22	42	80	3,825	5,219
General Diseases	22	569	344	178	8	27	34	2,007	2,598
Cowpox								506	506
Chicken-pox		1	1					1	2
Typhus		1	1						1
Influenza		19	15	2	1	1		16	35
Mumps		6	6					3	9
Cerebro-spinal fever		1				1			1
Enteric fever		20	15			3	2	1	21

Table VII.—Tabular Statement, by Districts, of Diseases and Injuries Treated during the Year ended June 30, 1893—Continued.

THE OHIO—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
General Diseases—Continued.									
Typho-malarial fever		2	2						2
Sporadic cholera		2	2					3	5
Dysentery	2	24	25				1	11	37
Malarial intermittent fever	3	89	81	7	1		3	175	267
Malarial remittent fever		15	12		1		2	5	20
Malarial cachexia		4	4					51	55
Erysipelas, simple		9	9						9
Syphilis:									
Primary	2	22	15	9				41	65
Secondary	4	106	10	86	4	2	8	414	524
Gonorrhœa	1	25	19	6		1		307	333
Animal parasites		2	1	1				3	5
Effects of excessive venery								1	1
Alcoholism		21	17	4				6	27
Debility		3	2	1				45	48
Old age	1						1		1
Rheumatic fever	2	18	16	4				24	44
Rheumatism	3	117	85	26			9	284	404
Osteo-arthritis		1	1						1
Nonmalignant new growth		4	4					23	27
Malignant new growth		2	1			1			2
Tubercle	4	52		31	1	17	7	70	126
Scrofula		3		1		1	1	7	10
Anæmia								10	10
Local Diseases	**22**	**588**	**401**	**149**	**14**	**13**	**33**	**1,651**	**2,261**
DISEASES OF THE NERVOUS SYSTEM	2	22	13	7			4	105	129
Inflammation of membranes of brain and spinal cord		1	1						1
Myelitis	1			1					1
Neuritis								2	2
Locomotor ataxy		5		2			3	10	15
Hemiplegia	1						1	1	2
Paraplegia		1		1					1
Local paralysis		1		1				6	7
Spasm of muscle		1		1				1	2
Neuralgia		6	5	1				32	38
Facial		5	5					15	20
Sciatica		2	2					5	7
Vertigo								10	10
Megrim								15	15
Epilepsy								8	8
MENTAL DISEASES		2	1		1			1	3
Hypochondriasis								1	1
Insanity		2	1		1				2
DISEASES OF THE EYE		11	5	3	1		2	36	47
Conjunctivitis		3		2			1	25	28
Keratitis								1	1
Ulcer of cornea		1	1					2	3
Staphyloma		1	1						1
Inflammation of the sclerotic		1		1					1
Iritis		5	3		1		1	2	7
Neuro-retinitis								1	1
Cataract								3	2
Epiphora								2	3
DISEASES OF THE EAR	1	3	3	1				11	15
Hæmatoma of the auricle								1	1
Inflammation of the external meatus, acute								1	1
Abscess of the external meatus		1	1						1
Accumulation of wax								1	1
Inflammation of the middle ear	1	2	2	1				6	9
Obstruction of the Eustachian tube								2	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE OHIO—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE NOSE		3	1	2				45	48
Epistaxis								1	1
Nasal catarrh		3	1	2				43	46
Ulceration								1	1
DISEASES OF THE CIRCULATORY SYSTEM	1	15		7	2	4	3	48	64
Pericarditis		1				1		4	5
Endocarditis								2	2
Valvular disease:									
Aortic	1	1		1		1		11	13
Mitral		10		4	2	2	2	22	32
Hypertrophy of heart		1		1				2	3
Palpitation and irregular action of heart								5	5
Aneurism of arteries		1					1	2	3
Varix		1		1					1
DISEASES OF THE RESPIRATORY SYSTEM	1	96	67	23	3	2	2	343	440
Hay-asthma								1	1
Laryngitis:									
Acute		4	1	3				11	15
Chronic								1	1
Bronchitis:									
Acute		60	50	6	3		1	247	307
Chronic		7	1	5			1	47	54
Catarrhal		1		1				2	3
Spasmodic asthma		2		2				12	14
Hemorrhage of lung		1		1				2	3
Pneumonia	1	12	11			2		1	14
Pneumonic phthisis:									
Acute								2	2
Chronic		2		2				7	9
Pleurisy:									
Acute		7	4	3				9	16
Chronic								1	1
DISEASES OF THE DIGESTIVE SYSTEM	3	144	114	25	1	4	3	539	686
Ulcer of the lips								1	1
Stomatitis								5	5
Caries of dentine and cementum								1	1
Abscess of dental periosteum								1	1
Ulceration of gums and alveoli								1	1
Toothache								1	1
Inflammation of the tongue		1	1						1
Ulcer of the tongue								1	1
Hypertrophy of tonsils								2	2
Elongated uvula								1	1
Relaxed throat								1	1
Sore throat		5	4			1		27	32
Quinsy								2	2
Follicular tonsilitis		6	5			1		15	21
Ulceration of fauces								1	1
Inflammation of salivary glands		1	1						1
Salivation		1	1						1
Follicular inflammation of the pharynx								19	19
Post-pharyngeal abscess								1	1
Ulceration of pharynx								4	4
Inflammation of the stomach		17	14	2		1		43	60
Ulceration of the stomach								1	1
Dyspepsia		2	2					79	81
Vomiting								1	1
Inflammation of the intestines:									
Catarrhal	1	15	15	1				22	38
Ulcerative		4	3	1					4
Abscess in the subperitoneal tissue								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30. 1893—Continued.

THE OHIO—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE DIGESTIVE SYSTEM—Continued.									
Hernia		7	2	3	1		1	41	48
Diarrhœa	1	53	45	8			1	94	148
Constipation		2	2					88	90
Colic		1	1					4	5
Abscess of the rectum		2	1			1		2	4
Ulceration of the rectum		1	1						1
Piles:									
Internal		6	4	2				17	23
External	1	3	3	1				12	16
Prolapsus of the rectum		1		1					1
Fistula in ano		5	3	2				1	6
Fissure of the anus		1	1						1
Hypertrophy of the liver		2	2					2	4
Congestion of the liver		1		1				15	16
Hepatitis								25	25
Cirrhosis of liver		2		1			1		2
Abscess of liver		1	1					2	3
Jaundice		1		1				3	4
Inflammation of hepatic ducts and gall-bladder		2	2					2	4
Gallstones		1		1					1
DISEASES OF THE LYMPHATIC SYSTEM	6	58	45	11	2		6	42	106
Hypertrophy of the spleen								1	1
Inflammation of lymph glands	5	34	26	6	2		5	29	68
Suppuration of lymph glands	1	24	19	5			1	12	37
DISEASES OF THE URINARY SYSTEM		14	4	6	1	2	1	52	61
Congestion of kidney								1	1
Acute nephritis		3		1	1	1		4	7
Bright's disease		5		3		1	1	3	8
Pyelitis								1	1
Nephralgia								1	1
Diabetes insipidus		1		1					1
Suppression of urine								1	1
Hæmaturia		1	1					3	4
Inflammation of bladder:									
Acute		2	2					6	8
Subacute		1	1					17	18
Chronic		1		1				6	7
Irritability of bladder								4	4
Incontinence of urine								5	5
DISEASES OF THE GENERATIVE SYSTEM	7	128	93	33	2		7	225	360
Urethritis		1	1					16	17
Gleet								4	4
Stricture of urethra:									
Organic		14	7	7				19	33
Spasmodic		1	1						1
Urinary fistula		3		1	1		1	2	5
Hypertrophy of prostate gland								4	4
Chronic inflammation of prostate gland								1	1
Œdema of the penis								1	1
Inflammation of glans penis								9	9
Ulcer of penis	6	82	68	18			2	138	226
Phimosis		4	3				1	3	7
Paraphimosis		1	1					1	2
Abscess of the scrotum		1		1					1
Inflammation of spermatic cord								3	3
Hydrocele of tunica vaginalis								4	4
Orchitis:									
Acute	1	13	8	4			2	8	22
Chronic		1	1						1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE OHIO—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE GENERATIVE SYSTEM—Continued.									
Epididymitis		6	3	1	1		1	6	12
Impotence								2	2
Inflammation of the uterus		1	1					2	3
Inflammation of the vagina								1	1
Metrorrhagia								1	1
DISEASES OF THE ORGANS OF LOCOMOTION		12	4	6	1	1		5	17
Periostitis		1	1						1
Caries		2		1		1		4	6
Synovitis:									
Acute		6	3	2	1				6
Chronic								1	1
Ankylosis		1		1					1
Psoas, lumbar, and other abscesses		1		1					1
Club foot		1		1					1
DISEASES OF THE CONNECTIVE TISSUE	1	26	24	3				23	50
Œdema	1	2	3						3
Inflammation		5	5					3	8
Abscess		19	16	3				20	39
DISEASES OF THE SKIN		53	26	22			5	161	214
Erythema		1	1					2	3
Urticaria								3	3
Eczema		4	2	2				44	48
Intertrigo								1	1
Impetigo								1	1
Rupia								1	1
Pityriasis		1		1					1
Prurigo								1	1
Lichen								2	2
Psoriasis		1		1				3	4
Miliaria								1	1
Herpes								8	8
Zona		1	1					3	4
Acne								1	1
Chilblain		1		1				1	2
Frostbite		6	4	2				2	8
Ulcer		29	13	13			3	55	84
Cicatrices								1	1
Fissures								1	1
Boil		4	4					12	16
Carbuncle		2		2				11	13
Gangrene		1					1		1
Whitlow		1	1					3	4
Corn								1	1
Wen		1					1	3	4
PARASITIC DISEASES OF THE SKIN		1	1					15	16
Ringworm		1	1						1
Tinea versicolor								1	1
Itch								13	13
Phthiriasis								1	1
Poisons		1	1					2	8
Metals and their salts		1	1						1
Vegetable poisons								2	2
POISONED WOUNDS								1	1
Venomous animals								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE OHIO—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Injuries	8	184	149	28		2	13	164	356
GENERAL INJURIES		12	8	2			2	13	25
Burns and scalds		11	8	1			2	10	21
Heat-stroke								2	2
Multiple injury		1		1					1
Exhaustion								1	1
LOCAL INJURIES	8	172	141	26		2	11	151	331
Strain of muscles		3	3					8	11
Contusion of scalp		1	1					1	2
Scalp wound:									
Bone not exposed		9	9					3	12
Bone exposed		1	1						1
Fracture of the vault of the skull		2	1			1			2
Contusion of face		1	1					1	2
Wound of face and mouth		4	3	1				3	7
Contusion of the eye		2	2					2	4
Foreign body in cornea or conjunctiva		2	2					2	4
Wound of eyelid		1	1						1
Wound of conjunctiva								1	1
Foreign body in external meatus								1	1
Contusion of the chest		5	5					6	11
Fracture of the ribs	1	4	3	2				8	13
Wound of parietes of chest								1	1
Contusion of back		5	4				1	6	11
Sprain of back	1	9	10					6	16
Wound of back								1	1
Contusion of abdomen		2	1	1					2
Wound of parietes of abdomen		3	2			1			3
Contusion of upper extremities	1	8	7	2					9
Sprain of the shoulder		7	7						7
Sprain of the wrist		1	1						1
Wound of the upper extremities	1	25	22	3			1		26
Fracture of the humerus		1	1						1
Fracture of both bones of forearm		3		3					3
Dislocation of the humerus		2	1	1					2
Contusion of the lower extremities	1	28	26	2			1		29
Sprain of the knee		1	1						1
Sprain of the ankle		18	11	6			1		18
Sprain of the foot		1	1						1
Wound of the lower extremities		17	10	3			4		17
Fracture of cervix femoris	1	1					2		2
Fracture of leg, both bones	1	1		2					2
Fracture of tibia alone	1		1						1
Fracture of phalanges of toes		1	1						1
Dislocation of the knee		1					1		1
Dislocation of the metatarsus and phalanges		1	1						1
Separation of sesamoid bone		1	1						1

THE MISSISSIPPI.

DISEASES.	Remaining under treatment from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
TOTAL CASES	64	1,390	925	393	27	53	56	2,922	4,376
General Diseases	24	716	466	211	16	20	27	1,667	2,407
Cowpox		1	1					296	297
Chicken-pox								1	1
Measles		3	3						3
Influenza		23	17	3		3		51	74
Simple continued fever		1	1						1
Enteric fever		6	2			2	2		6
Sporadic cholera		2	2						2

Table VII.—Tabular Statement, by Districts, of Diseases and Injuries Treated during the Year ended June 30, 1893—Continued.

THE MISSISSIPPI—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
General Diseases—Continued.									
Dysentery		19	14	5				34	53
Malarial intermittent fever	3	247	231	13	2	1	3	298	548
Malarial remittent fever		39	30	2		4	3	32	71
Malarial cachexia	1	30	27	2	2			65	96
Phagedæna	1	2	1	1		1		2	5
Erysipelas, simple		10	9	1				3	13
Syphilis:									
Primary		11		11				43	54
Secondary	4	127	11	111	3		6	335	466
Gonorrhœa		24	11	9	1		3	232	256
Animal parasites		2		2				2	4
Effects of excessive venery								1	1
Alcoholism	2	23	21	2	2			18	43
Delirium tremens		3	1	2					3
Supernumerary finger								2	2
Debility		5	3	2				17	22
Rheumatic fever		10	5	5				43	53
Rheumatism	5	86	69	18	2		2	148	239
Osteo-arthritis		2	2						2
Cysts								3	3
Nonmalignant new growth		2	2					6	8
Malignant new growth		1				1		3	4
Tubercle	7	35	2	20	4	8	8	26	68
Scrofula	1	1	1	1					2
Anæmia		1		1				6	7
Local diseases	27	465	301	147	9	15	20	1,057	1,549
DISEASES OF THE NERVOUS SYSTEM	2	22	12	9		1	2	81	105
Hemorrhage cerebral		1		1					1
Inflammation:									
Of membranes of brain and spinal cord								2	2
Of cerebral membranes	1		1						1
Spinal meningitis		1		1				1	2
Myelitis	1	1	1			1			2
Neuritis		1		1					1
Sclerosis		1		1				1	2
Spastic spinal paralysis								2	2
Locomotor ataxia		1		1				1	2
Hemiplegia								1	1
Paraplegia		1	1						1
Local paralysis		3		2			1	2	5
Ophthalmoplegia externa								1	1
Spasm of muscle								3	3
Hyperæsthesia								1	1
Neuralgia		3	3					52	55
Facial		2	2					5	7
Sciatica		2	2						2
Vertigo								4	4
Megrim		2	2					4	6
Epilepsy		3		2			1	1	4
MENTAL DISEASES								1	1
Hypochondriasis								1	1
DISEASES OF THE EYE		7	6	1				14	21
Conjunctivitis		4	4					9	13
Keratitis		2	1	1					2
Cataract								1	1
Dacryocystitis								1	1
Blepharitis								2	2
Stye								1	1
Ectropion		1	1						1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE MISSISSIPPI—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE EAR		6	4	2				8	14
Inflammation of the middle ear		6	4	2				5	11
Ulceration of membrana tympani								1	1
Tinnitus								2	2
DISEASES OF THE NOSE		2	1	1				16	18
Nasal catarrh		2	1	1				16	18
DISEASES OF THE CIRCULATORY SYSTEM	1	22		15	1	4	3	23	46
Pericarditis		2		1		1			2
Endocarditis		1		1					1
Valvular disease:									
Aortic		3		1		2		3	6
Mitral		10		7			3	8	18
Hypertrophy of heart		1		1				7	8
Degeneration of heart, fatty								1	1
Dilatation of heart		1		1					1
Palpitation and irregular action of heart		1		1				3	4
Aneurism of arteries	1	2		1	1	1			3
Phlebitis								1	1
Varix		1		1					1
DISEASES OF THE RESPIRATORY SYSTEM	3	67	39	24	1	3	3	219	289
Hay asthma								1	1
Laryngitis:									
Acute		1	1					1	2
Catarrhal								1	1
Bronchitis:									
Acute	1	24	19	5	1			165	190
Chronic		8		8				18	26
Catarrhal								8	8
Spasmodic asthma	1	2		2			1	5	8
Passive congestion of lung								1	1
Hemorrhage of lung		1	1					2	3
Pneumonia		20	14	2		3	1	10	30
Cirrhosis of lung								1	1
Pneumonic phthisis:									
Acute		1		1					1
Chronic								2	2
Emphysema		1		1					1
Collapse								2	2
Pleurisy:									
Acute		6	2	4				2	8
Chronic	1	1		1			1		2
Empyema		2	2						2
DISEASES OF THE DIGESTIVE SYSTEM	4	128	96	25	2	5	4	370	502
Stomatitis								3	3
Abscess of the antrum		1	1						1
Caries of dentine and cementum								2	12
Abscess of dental periosteum		1	1						1
Ulceration of gums and alveoli								1	1
Hypertrophy of tonsils								1	1
Sore throat		1	1					17	18
Quinsy		2	2					6	8
Follicular tonsilitis		5	3	2				8	13
Follicular inflammation of the pharynx		4	3	1				14	18
Post-pharyngeal abscess		1	1						1
Stricture of œsophagus								1	1
Inflammation of the stomach		10	6	3		1		15	25
Dyspepsia		2	1	1				38	40
Gastrodynia		1	1						1
Vomiting	1		1					2	3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE MISSISSIPPI—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE DIGESTIVE SYSTEM—Continued.									
Inflammation of the intestines:									
Catarrhal		29	24	4			1	26	55
Ulcerative		15	11	2		2		13	28
Hernia		8	6	1		1		62	70
Diarrhœa		23	19	2	1		1	71	94
Constipation								48	48
Colic		3	3					3	6
Ulceration of the rectum		2		2				4	6
Piles:									
Internal		6	2	3			1	5	11
External	1	6	6	1				8	15
Prolapsus of the rectum		2	1	1					2
Fistula in ano	1	1	1		1			5	7
Fissure of the anus		1					1		1
Hypertrophy of the liver								1	1
Congestion of the liver								1	1
Cirrhosis of liver		1		1					1
Lardaceous liver	1					1			1
Jaundice		1	1					3	4
Inflammation of hepatic ducts and gall bladder								2	2
Peritonitis		2	1	1					2
DISEASES OF THE LYMPHATIC SYSTEM	2	21	16	5			2	18	41
Hypertrophy of the spleen								1	1
Hypertrophy of lymph glands								1	1
Inflammation of lymph vessels		3	2	1				10	13
Suppuration of lymph vessels	2	18	14	4			2	6	26
DISEASES OF THE URINARY SYSTEM	2	15	4	10	1		2	20	37
Acute nephritis	1	3	1	2	1			1	5
Bright's disease	1	6	1	5			1		7
Diabetes insipidus								1	1
Lithuria								2	2
Inflammation of bladder:									
Acute		5	2	2			1	5	10
Subacute		1		1				2	3
Chronic								4	4
Incontinence of urine								5	5
DISEASES OF THE GENERATIVE SYSTEM	7	94	64	35		1	1	159	260
Urethritis								5	5
Gleet								3	3
Urinary abscess		1	1						1
Stricture of urethra, organic	1	16	6	9		1	1	15	32
Inflammation of glans penis								3	3
Ulcer of penis	5	65	49	21				99	169
Phimosis								1	1
Paraphimosis								3	3
Abscess of the scrotum		1	1						1
Varicocele								3	3
Hydrocele of tunica vaginalis								2	2
Orchitis:									
Acute		2	1	1				16	18
Chronic								1	1
Epididymitis	1	7	5	3					8
Spermatorrhœa								2	2
Impotence								1	1
Inflammation of the ovary		1	1						1
Cyst of the ovary								1	1
Hypertrophy of the uterus		1		1				2	3
Amenorrhœa								2	2
DISEASES OF THE ORGANS OF LOCOMOTION	1	15	11	4		1		17	33
Ostitis								3	3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE MISSISSIPPI—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE ORGANS OF LOCOMOTION—Continued.									
Periostitis	......	3	3	......	......	....	......	6	9
Necrosis	1	3	1	2	......	1	......	......	4
Synovitis:									
Acute	......	6	5	1	......	....	......	5	11
Chronic	......	......	......	......	......	....	......	1	1
Abscess of joints	......	1	1	......	......	....	......	......	1
Angular curvature of spine	......	1	......	1	......	....	......	......	1
Club foot	......	......	......	......	......	....	......	1	1
Inflamed bursa	......	......	......	......	......	....	......	1	1
Bursal abscess	......	1	1	......	......	....	......	......	1
DISEASES OF THE CONNECTIVE TISSUE	2	22	17	7	......	....	......	21	45
Œdema	......	......	......	......	......	....	......	1	1
Inflammation	1	4	3	2	......	....	......	2	7
Abscess	1	18	14	5	......	....	......	18	37
DISEASES OF THE SKIN	3	41	30	9	2	....	3	89	133
Erythema	......	......	......	......	......	....	......	2	2
Urticaria	......	......	......	......	......	....	......	5	5
Eczema	......	4	1	2	1	....	......	14	18
Pityriasis	......	......	......	......	......	....	......	1	1
Lichen	......	......	......	......	......	....	......	2	2
Herpes	......	......	......	......	......	....	......	6	6
Zona	......	2	1	1	......	....	......	1	3
Acne	......	......	......	......	......	....	......	1	1
Sycosis	......	1	1	......	......	....	......	......	1
Frostbite	......	4	3	1	......	....	......	2	6
Ulcer	1	18	11	4	1	....	3	29	48
Cicatrices	1	......	......	1	......	....	......	2	3
Boil	......	4	4	......	......	....	......	13	17
Carbuncle	......	1	1	......	......	....	......	2	3
Whitlow	......	4	4	......	......	....	......	8	12
Lupus	1	2	3	......	......	....	......	1	4
Cheloid	......	1	1	......	......	....	......	......	1
PARASITIC DISEASES OF THE SKIN	......	3	1	......	2	....	......	1	4
Itch	......	1	1	......	......	....	......	1	2
Unclassified	......	2	......	......	2	....	......	......	2
Poisons	......	3	2	**1**	......	....	......	8	**11**
Metals and their salts	......	1	......	1	......	....	......	4	5
Vegetable poisons	......	2	2	......	......	....	......	4	6
POISONED WOUNDS	......	......	......	......	......	....	......	1	1
Vegetable substances	......	......	......	......	......	....	......	1	1
Injuries	**13**	**206**	**156**	**34**	**2**	**18**	**9**	**189**	**408**
GENERAL INJURIES	1	31	14	4	......	14	......	15	47
Burns and scalds	......	29	12	3	......	14	......	12	41
Effects of cold	......	......	......	......	......	....	......	3	3
Multiple injury	1	2	2	1	......	....	......	......	3
LOCAL INJURIES	12	175	142	30	2	4	9	174	361
Division of nerve	......	1	......	1	......	....	......	1	2
Strain of muscles	......	1	1	......	......	....	......	14	15
Rupture of muscles	......	......	......	......	......	....	......	1	1
Abrasion of skin	......	......	......	......	......	....	......	1	1
Foreign body in subcutaneous tissue	......	......	......	......	......	....	......	2	2
Scalp wound:									
Bone not exposed	......	8	5	2	......	1	......	10	18
Bone exposed	......	1	......	......	......	....	1	......	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE MISSISSIPPI—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Injuries—Continued.									
LOCAL INJURIES—Continued.									
Fracture of the vault of the skull		2		1			1		2
Contusion of face								3	3
Wound of face and mouth		6	4	1			1	3	9
Fracture of facial bones		1	1						1
Contusion of the eye		1	1						1
Contusion of the eye with rupture of sclerotic		1	1						1
Foreign body in cornea or conjunctiva								1	1
Wound of eyelid		1	1						1
Wound of the cornea		1			1				1
Wound of pinna		1		1					1
Contusion of soft parts of neck		2	2					1	3
Wound of neck		4	4						4
Foreign body in the pharynx								1	1
Foreign body in the œsophagus								1	1
Contusion of the chest	1	4	5					1	6
Fracture of the ribs		6	5	1				1	7
Wound of parietes of chest								4	4
Perforating wound of chest		2	1	1					2
Contusion of back		6	4	2				4	10
Sprain of back		3	2	1				11	14
Wound of back		4	3	1				1	5
Contusion of abdomen		1	1						1
Wound of parietes of abdomen		1				1			1
Contusion of the urethra, perineum, scrotum, and penis								1	1
Contusion of testicle		1	1					1	2
Contusion of upper extremities	1	8	7	2				27	36
Sprain of the shoulder								2	2
Sprain of the wrist		1	1					4	5
Sprain of the fingers								1	1
Wound of the upper extremities	3	26	19	10				29	58
Fracture of the clavicle		2	2						2
Fracture of the humerus		1	1						1
Fracture of the radius		2	2					1	3
Fracture of the ulna	1		1						1
Fracture of carpus, metacarpus, and phalanges		6	4	2				2	8
Dislocation of the humerus	1		1						1
Dislocation of the ulna		1	1						1
Contusion of the lower extremities	2	26	25	1			2	15	43
Sprain of the knee		3	3					1	4
Sprain of the ankle		9	6	2	1			9	18
Sprain of the foot	1		1					1	2
Wound of the lower extremities		17	16	1				11	28
Fracture of femur		2				2			2
Fracture of leg, both bones	1	2	3					1	4
Fracture of tibia alone	1	4	3				2	2	7
Fracture of fibula alone		4	3				1	1	5
Fracture of metatarsus		1					1	1	2
Fracture of phalanges of toes								2	2
AMPUTATIONS		1	1					1	2
Amputation of fingers								1	1
Amputation of thigh		1	1						1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE GREAT LAKES.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
TOTAL CASES	**196**	**172,5**	**1,714**	**680**	**88**	**75**	**156**	**9,307**	**12,020**
General Diseases	**92**	**1,073**	**726**	**292**	**34**	**40**	**73**	**4,656**	**5,821**
Cowpox		4	4					1,084	1,088
Measles		5	5						5
Scarlet fever		1	1						1
Influenza		65	49	9		3	4	55	120
Mumps		7	6	1				2	9
Simple continued fever	3	33	30	4			2	22	58
Enteric fever	11	138	129	5		6	9	23	172
Typho-malarial fever		1	1						1
Sporadic cholera		4	4					2	6
Epidemic diarrhea								23	23
Dysentery	1	9	8	1			1	12	22
Malarial intermittent fever	4	79	71	8			4	194	277
Malarial remittent fever	4	35	34	3		1	1	8	47
Malarial cachexia		1	1					3	4
Phagedæna		1	1					1	2
Erysipelas, simple	1	16	16	1				9	26
Syphilis:									
Primary	1	23	8	13	1		2	69	93
Secondary	7	119	11	98	4	3	10	807	933
Gonorrhœa	14	89	65	27	3		8	1,179	1,282
Animal parasites		2	2					7	9
Vegetable parasites								3	3
Effects of excessive venery								1	1
Alcoholism	3	68	55	4	5	3	4	68	139
Delirium tremens		4	3	1				5	9
Retained testicle								1	1
Debility		10	8	2				157	167
Rheumatic fever	9	39	36	9		1	2	10	58
Rheumatism	10	232	171	55	6	1	9	794	1,036
Osteo-arthritis	1	3	1	2			1		4
Nonmalignant new growth	1	4	4	1				22	27
Malignant new growth	2	4	2	1	1	1	1		6
Tubercle	20	76		47	14	20	15	87	183
Scrofula								1	1
Anæmia								7	7
Leucocythæmia		1				1			1
Local Diseases	**70**	**960**	**610**	**297**	**43**	**28**	**52**	**4,012**	**5,042**
DISEASES OF THE NERVOUS SYSTEM	10	76	31	35	8	1	11	195	281
Hemorrhage, cerebral		1				1			1
Inflammation of cerebral membranes		1					1		1
Myelitis		3		3				2	5
Neuritis		9	5	4				13	22
Sclerosis	1						1	2	3
Progressive muscular atrophy								1	1
Locomotor ataxy	4	5		2	2		5	9	18
Hemiplegia	3	3		2	1		3	7	13
Local paralysis	1	6	1	6				5	12
Spasm of muscle		2	2					1	3
Wry-neck								4	4
Paralysis agitans		1					1		1
Neurosis								1	1
Neurolgia		10	8	1	1			105	115
Facial		2	1	1				22	24
Sciatica	1	19	12	8				8	28
Vertigo		1	1					1	2
Megrim		1	1					9	10
Epilepsy		12		8	4			4	16
Hysteria								1	1
MENTAL DISEASES		1			1			2	3
Hypochondriasis								2	2
Insanity		1			1				1

Table VII.—Tabular Statement, by Districts, of Diseases, and Injuries Treated during the Year ended June 30, 1893—Continued.

THE GREAT LAKES—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
Diseases of the Eye	2	26	17	7	2		2	73	101
Ecchymosis of the conjunctiva		1	1						1
Conjunctivitis	2	12	10	2	2			59	73
Pterygium								2	2
Keratitis		3		2			1		3
Ulcer of cornea		2	2						2
Iritis		3	2	1				4	7
Atrophy of optic disc or papilla								1	1
Cataract		2	1				1	1	3
Squint		1		1					1
Abscess of lachrymal gland		1	1						1
Hæmatoma								1	1
Blepharitis								2	2
Stye								1	1
Abscess of eyelid		1		1					1
Trichiasis								1	1
Chalazion								1	1
Diseases of the Ear	2	5	4	2			1	34	41
Inflammation of the external meatus, acute								2	2
Abscess of the external meatus		1	1					1	2
Accumulation of wax								16	16
Inflammation of the middle ear	2	4	3	2			1	14	20
Perforation of membrana tympani								1	1
Diseases of the Nose								67	67
Epistaxis								1	1
Inflammation								2	2
Nasal catarrh								61	61
Ozæna								1	1
Perforation of the septum								2	2
Diseases of the Circulatory System	5	56	6	35	6	9	5	67	128
Pericarditis		1	1						1
Endocarditis		1			1				1
Valvular disease:									
Aortic	1	5		2		3	1	2	8
Mitral	3	31		25	3	5	1	23	57
Hypertrophy of heart								1	1
Degeneration of heart, fatty		2		2				1	3
Dilatation of heart		3		2		1		2	5
Angina pectoris		1	1					1	2
Palpitation and irregular action of heart		1		1				18	19
Degeneration of arteries	1	1					2	1	3
Aneurism of arteries		2			1		1	4	6
Phlebitis		1		1				1	2
Varix		7	4	2	1			13	20
Diseases of the Respiratory System	12	210	135	59	12	8	8	1,056	1,278
Laryngitis:									
Acute		2	1	1				7	9
Chronic								2	2
Bronchitis:									
Acute	4	119	90	25	3	2	3	874	997
Chronic	2	14	3	10	3			126	142
Catarrhal		1		1				4	5
Spasmodic asthma		7	3	4				11	18
Passive congestion of lung		1		1					1
Hemorrhage of lung		5	3	1			1	5	10
Pneumonia	1	26	20	1		4	2		27
Cirrhosis of lung	1						1		1
Pneumonic phthisis:									
Acute		4		2	2			1	5
Chronic	2	4		3	3			1	7
Emphysema		1		1					1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE GREAT LAKES—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE RESPIRATORY SYSTEM—Continued.									
Hydrothorax								1	1
Pleurisy:									
Acute	1	21	14	5	1	1	1	11	33
Chronic	1	4	1	4				13	18
Empyema		1				1			1
DISEASES OF THE DIGESTIVE SYSTEM	8	169	116	44	3	7	7	1,166	1,343
Ulcer of the lips								1	1
Stomatitis								4	4
Ulcerative stomatitis								2	2
Cyst of the mouth								1	1
Ulceration of the dental pulp								1	1
Caries of dentine and cementum								14	14
Abscess of dental periosteum								6	6
Inflammation of gums and alveoli								3	3
Ulceration of gums and alveoli								3	3
Toothache								2	2
Inflammation of the tongue								1	1
Ulcer of the tongue								4	4
Hypertrophy of tonsils								2	2
Elongated uvula								3	3
Sore throat	1	2		3				89	92
Quinsy		2	1		1			15	17
Follicular tonsilitis		10	8	2				31	41
Ulceration of fauces		1	1					2	3
Inflammation of salivary glands								3	3
Follicular inflammation of the pharynx		3	3					25	28
Inflammation of the stomach	1	22	18	4		1		41	64
Ulceration of the stomach		2	1				1	1	3
Dyspepsia		9	6	2	1			272	281
Gastrodynia		1	1					3	4
Vomiting								2	2
Hemorrhage of the intestines		15	12	2	1			49	64
Inflammation of the intestines, catarrhal	3	10	8	2		2	1	1	14
Abscess in the sub-peritoneal tissue	1	2	2			1			3
Obstruction of the intestines		2	2						2
Hernia		11	5	6				112	123
Abdominal fistula		1		1					1
Diarrhœa	1	33	25	6		1	2	187	221
Constipation		7	5	2				122	129
Colic		4	3	1				26	30
Ulceration of the rectum								2	2
Piles:									
Internal		7	3	4				28	35
External		1	1					33	34
Prolapsus of the anus		1	1						1
Fistula in ano	1	3	3	1				4	8
Fissure of the anus								2	2
Pruritus ani								2	2
Congestion of the liver		3	1	1			1	52	55
Hepatitis		1	1					3	4
Perihepatitis		5		4		1			5
Jaundice		4	3	1				10	14
Inflammation of hepatic ducts and gall-bladder		2		1			1		2
Gallstones		1	1						1
Peritonitis		4	1	1		1	1	2	6
DISEASES OF THE LYMPHATIC SYSTEM	10	68	45	28	2		3	99	177
Hypertrophy of the spleen								2	2
Splenitis								1	1
Hypertrophy of lymph glands		1			1				1
Inflammation of lymph vessels	1	3	3	1				2	6

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE GREAT LAKES—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE LYMPHATIC SYSTEM—Continued.									
Inflammation of lymph glands	6	24	16	12	1		1	61	91
Suppuration of lymph glands	3	40	26	15			2	33	76
DISEASES OF THE THYROID BODY								3	3
Goitre								3	3
DISEASES OF THE URINARY SYSTEM	1	26	8	13	2	3	1	85	112
Congestion of kidney								2	2
Acute nephritis		2		2				9	11
Bright's disease		8		5	1	2		8	16
Pyelitis								1	1
Abcess of kidney		1		1					1
Calculus in ureter		1	1					1	2
Diabetes insipidus		2		1	1			1	3
Lithuria								4	4
Phosphuria								1	1
Inflammation of bladder:									
Acute	1	8	6	1		1	1	33	42
Subacute		1		1				1	2
Chronic								6	6
Calculus of blander	1	2		2					2
Irritability of bladder								13	13
Retention of urine		1	1					2	3
Incontinence of urine								3	3
DISEASES OF THE GENERATIVE SYSTEM	6	120	98	26	1		1	566	692
Urethritis								20	20
Gleet								22	22
Ulcer of the urethra								1	1
Stricture of urethra, organic		14	7	7				77	91
Urinary fistula	2		1	1				2	4
Hypertrophy of prostate gland		1		1				1	2
Acute inflammation of prostate gland		2	1	1				1	3
Inflammation of the penis		1					1		1
Inflammation of glans penis								22	22
Ulcer of penis		56	45	10	1			302	358
Phimosis		5	5					2	7
Œdema of the scrotum		1	1						1
Abcess of the scrotum	1		1					2	3
Varicocele		3	2	1				7	10
Hydrocele of tunica vaginalis		4	4					3	7
Atrophy of testicle								1	1
Orchitis:									
Acute	1	23	23	1				28	52
Chronic								9	9
Epididymitis		4	4					22	26
Spermatorrhœa								22	22
Pelvic cellulitis		1		1					1
Inflammation of the uterus	2		1	1					2
Ulcer of the uterus		1		1					1
Displacements and distortions of the uterus								1	1
Inflammation of the vagina		1	1						1
Abscess of the vulva		1	1						1
Dysmenorrhœa		1		1				2	3
Menorrhagia								1	1
Leucorrhœa		1	1					17	18
Premature labor								1	1
DISEASES OF THE ORGANS OF LOCOMOTION	6	37	20	19	1		3	40	83
Periostitis		5	4	1				10	15
Caries	1			1					1
Necrosis	1	5	1	4			1	5	11

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE GREAT LAKES—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE ORGANS OF LOCOMOTION—Continued.									
Ununited fracture, or false joint	......	1	......	......	......	....	1	......	1
Dropsy of joints	......	1	1	......	......	....	......	......	1
Synovitis:									
Acute	2	7	7	1	......	....	1	4	13
Chronic	......	4	......	4	......	....	......	4	8
Abscess of joints	1	1	2	......	......	....	......	......	2
Ankylosis	......	3	......	3	......	....	......	3	6
Loose body in joint	......	......	......	......	......	....	......	2	2
Atrophy of muscles	......	......	......	......	......	....	......	1	1
Inflammation of muscles	......	......	......	......	......	....	......	1	1
Abscess of muscles	......	2	1	1	......	....	......	......	2
Contraction of muscles	......	1	......	1	......	....	......	......	1
Contraction of tendons and fasciæ	1	1	1	1	......	....	......	1	3
Talipes	......	2	......	1	1	....	......	......	2
Inflamed bursa	......	2	2	......	......	....	......	5	7
Ganglion	......	2	1	1	......	....	......	4	6
DISEASES OF THE CONNECTIVE TISSUE	2	55	44	9	2	....	2	74	131
Œdema	......	......	......	......	......	....	......	4	4
Inflammation	......	8	6	2	......	....	......	12	20
Abscess	2	47	38	7	2	....	2	58	107
DISEASES OF THE SKIN	6	110	86	19	3	....	8	419	535
Erythema	1	1	2	......	......	....	......	9	11
Urticaria	......	......	......	......	......	....	......	19	19
Eczema	1	16	11	3	......	....	3	113	130
Impetigo	......	......	......	......	......	....	......	2	2
Pityriasis	......	1	1	1	......	....	......	2	3
Prurigo	......	......	......	......	......	....	......	1	1
Lichen	......	1	......	1	......	....	......	3	4
Psoriasis	......	1	1	......	......	....	......	26	27
Miliaria	......	......	......	......	......	....	......	4	4
Herpes	......	......	......	......	......	....	......	12	12
Zona	......	......	......	......	......	....	......	8	8
Pemphigus	......	......	......	......	......	....	......	1	1
Acne	......	......	......	......	......	....	......	11	11
Sycosis	......	......	......	......	......	....	......	1	1
Freckles	......	......	......	......	......	....	......	1	1
Frostbite	......	12	12	......	......	....	......	7	19
Ulcer	3	48	33	12	2	....	4	82	133
Cicatrices	......	1	1	......	......	....	......	......	1
Fissures	......	......	......	......	......	....	......	1	1
Boil	......	5	3	1	1	....	......	59	64
Carbuncle	1	6	6	......	......	....	1	6	13
Whitlow	......	12	10	2	......	....	......	27	39
Onychia	......	4	4	......	......	....	......	3	7
Corn	......	......	......	......	......	....	......	6	6
Wen	......	2	2	......	......	....	......	6	8
Pruritus	......	......	......	......	......	....	......	8	8
Hyperidrosis	......	......	......	......	......	....	......	1	1
PARASITIC DISEASES OF THE SKIN	......	1	......	1	......	....	......	66	67
Ringworm	......	......	......	......	......	....	......	8	8
Tinea versicolor	......	......	......	......	......	....	......	7	7
Itch	......	1	......	1	......	....	......	43	44
Phthiriasis	......	......	......	......	......	....	......	5	5
Irritation by stinging plants	......	......	......	......	......	....	......	1	1
Unclassified	......	......	......	......	......	....	......	2	2
Poisons	......	3	1	......	2	....	......	4	7
Metals and their salts	......	......	......	......	......	....	......	1	1
Vegetable poisons	......	3	1	......	2	....	......	3	6

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE GREAT LAKES—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Poisons—Continued.									
POISONED WOUNDS	......	1	1	......	......	...	......	3	4
Venomous animals	......	1	1	......	......	...	......	2	3
Vegetable substances	......	......	......	......	......	...	......	1	1
Injuries	**34**	**480**	**376**	**91**	**9**	**7**	**31**	**632**	**1,146**
GENERAL INJURIES	3	40	27	7	1	4	4	46	89
Burns and scalds	1	22	16	1	......	3	3	28	51
Effects of cold	......	......	......	......	......	...	......	7	7
Heat stroke	......	9	6	2	1	...	......	11	20
Multiple injury	2	9	5	4	......	1	1	......	11
LOCAL INJURIES	31	440	349	84	8	3	27	586	1,057
Contusion of nerves	......	1	......	......	......	...	1	1	2
Strain of muscles	......	2	2	......	......	...	......	26	28
Abrasion of skin	......	1	1	......	......	...	......	......	1
Foreign body in subcutaneous tissue	......	......	......	......	......	...	......	4	4
Contusion of scalp	......	6	5	1	......	...	......	7	13
Scalp wound:									
Bone not exposed	......	19	17	2	......	...	......	29	48
Bone exposed	......	7	5	2	......	...	......	6	13
Contusion of skull	......	1	......	1	......	...	......	......	1
Fracture of the vault of the skull	......	2	3	......	......	...	......	......	3
Fracture of the base of the skull	......	......	......	......	......	...	......	1	1
Concussion of brain	......	3	1	1	......	...	1	......	3
Contusion of face	1	10	7	4	......	...	......	2	13
Wound of face and mouth	1	12	12	1	......	...	......	25	38
Fracture of facial bones	......	7	3	3	......	...	1	1	8
Dislocation of the lower jaw	......	1	1	......	......	...	......	1	2
Contusion of the eye	......	3	2	......	1	...	......	2	5
Foreign body in cornea or conjunctiva	......	......	......	......	......	...	......	16	16
Wound of eyelid	......	1	1	......	......	...	......	3	4
Wound of the cornea	......	2	2	......	......	...	......	......	2
Wound of the parts within the orbit	......	1	......	1	......	...	......	......	1
Wound of pinna	......	......	......	......	......	...	......	2	2
Foreign body in external meatus	......	......	......	......	......	...	......	2	2
Wound of neck	......	......	......	......	......	...	......	1	1
Contusion of the chest	......	21	19	1	......	...	1	29	50
Fracture of the ribs	1	12	8	2	......	...	3	7	20
Fracture of the sternum	......	1	1	......	......	...	......	......	1
Wound of parietes of chest	......	1	1	......	......	...	......	2	3
Perforating wound of chest	......	1	1	......	......	...	......	......	1
Penetrating wound of pleura, or lung	......	1	1	......	......	...	......	......	1
Contusion of back	......	24	21	3	......	...	......	18	42
Sprain of back	1	14	12	2	1	...	......	21	36
Wound of back	......	2	2	......	......	...	......	4	6
Fracture of spine	......	2	......	......	......	1	1	......	2
Dislocation of spine	......	1	......	......	......	1	......	......	1
Concussion of cord	......	1	......	......	......	...	1	2	3
Contusion of abdomen	......	2	2	......	......	...	......	1	3
Wound of rectum	......	1	1	......	......	...	......	......	1
Fracture and dislocation of pelvis	......	4	2	......	1	1	......	......	4
Contusion of testicle	......	1	1	......	......	...	......	5	6
Contusion of upper extremities	3	21	15	8	......	...	1	71	95
Sprain of the shoulder	......	......	......	......	......	...	......	4	4
Sprain of the elbow	1	3	4	......	......	...	......	1	5
Sprain of the wrist	1	8	9	......	......	...	......	24	33
Sprain of the fingers	......	1	1	......	......	...	......	5	6
Wound of the upper extremities	3	49	37	9	1	...	5	106	158
Wound of joint, upper extremities	......	......	......	......	......	...	......	1	1
Fracture of the clavicle	1	6	4	1	2	...	......	2	9
Fracture of the humerus	1	4	1	4	......	...	......	1	6
Fracture of the radius	1	8	9	......	......	...	......	2	11
Fracture of the ulna	......	1	1	......	......	...	......	......	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE GREAT LAKES—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admited during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Injuries—Continued.									
LOCAL INJURIES—Continued.									
Fracture of both bones of forearm		5	5					1	6
Fracture of carpus, metacarpus, and phalanges	1	5	4		1		1	10	16
Dislocation of the humerus		3	3					1	4
Dislocation of the radius		1	1						1
Dislocation of the ulna		1	1						1
Dislocation of the metacarpus								1	1
Contusion of the lower extremities	3	41	38	5			1	58	102
Sprain of the knee		6	4	2				11	17
Sprain of the ankle	2	43	29	15	1			24	69
Sprain of the foot		1					1	3	4
Wound of the lower extremities	3	38	29	8			4	27	68
Fracture of femur	1	3	2	1			1		4
Fracture of cervix femoris	1	1	1	1					2
Fracture of patella	1	2	1	2					3
Fracture of leg, both bones	3	6	4	3			2	3	12
Fracture of tibia alone	1	5	6					4	10
Fracture of fibula alone		2	2					1	3
Fracture of metatarsus		2	1	1				1	3
Dislocation of the femur at the hip		1	1						1
Dislocation of the knee		1					1		1
Dislocation of the foot at the ankle		1	1						1
AMPUTATIONS		2	1				1	6	8
Amputation of fingers		2	1				1	6	8

THE PACIFIC.

DISEASES.	Remaining under treatment from previous year.	Admited during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
TOTAL CASES	**159**	**1,611**	**770**	**740**	**49**	**66**	**145**	**3,834**	**5,604**
General Diseases	**52**	**628**	**249**	**326**	**18**	**31**	**56**	**1,549**	**2,229**
Cowpox								1	1
Influenza		11	11					19	30
Mumps		1	1					3	4
Simple continued fever		2	2						2
Enteric fever	2	22	21			1	2	1	25
Dysentery	2	12	4	6		1	3	6	20
Malarial intermittent fever		34	29	4	1			75	109
Malarial remittent fever	1	26	19	6	1		1	5	32
Malarial cachexia		4	1	3				49	53
Erysipelas, simple	1	19	18				2	4	24
philis:									
Primary	1	11		11			1	37	49
Secondary	11	107	1	106	1	1	9	433	551
Gonorrhœa	5	68	19	44	1	1	8	508	581
Animal parasites								12	12
Scurvy	1	26	10	15		1	1	2	29
Alcoholism	1	21	15	5	1		1	27	49
Cleft palate		1	1						1
Debility	1	13	9	3			2	39	53
Rheumatic fever	6	73	43	28			8	39	118
Rheumatism	6	95	39	50	4	2	6	211	312
Osteo-arthritis	1	2		1		1	1	1	4
Cysts								1	1
Nonmalignant new growth	1	7	3	3	1		1	15	23
Malignant new growth		5	2	2			1		5
Tubercle	12	64	1	36	8	22	9	58	134
Scrofula		2		2					2
Anæmia		1		1				2	3
Diabetes mellitus		1				1		1	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE PACIFIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases	**76**	**651**	**308**	**305**	**28**	**30**	**56**	**1,815**	**2,542**
DISEASES OF THE NERVOUS SYSTEM	16	40	12	28	2	5	9	99	155
Congestion of brain	1			1					1
Hemorrhage, cerebral	1						1		1
Inflammation of spinal cord and its membranes		2		2					2
Myelitis		2		1			1		2
Softening of brain or cord		1			1				1
Sclerosis		1		1				1	2
Progressive muscular atrophy		2		2					2
Spastic spinal paralysis	1						1		1
Locomotor ataxy	1	4		4		1		5	10
Apoplexy		1		1					1
Hemiplegia	4	4		2		3	3	20	28
Paraplegia		2		2					2
Local paralysis	2	4	1	2		1	2	4	10
Spasm of muscle								1	1
Wryneck								1	1
Aphasia								1	1
Neuralgia	1	8	8	1				38	47
Facial								6	6
Sciatica	2	4	1	5				8	14
Vertigo	2		1	1				3	5
Megrim								1	1
Epilepsy	1	3		3			1	10	14
Hysteria		2	1		1				2
MENTAL DISEASES		1		1				5	6
Hypochondriasis		1		1				4	5
Melancholia								1	1
DISEASES OF THE EYE	3	10	4	5	4			55	68
Ecchymosis of the conjunctiva								1	1
Conjunctivitis		3	2		1			33	36
Keratitis		1	1					4	5
Ulcer of cornea		1		1				1	2
Opacity of cornea		1			1				1
Staphyloma								1	1
Iritis		3	1	2				4	7
Atrophy of optic disc or papilla								1	1
Retinitis		1			1				1
Cataract								1	1
Ametropia								1	1
Night blindness								1	1
Muscæ volitantis								2	2
Amblyopia	1				1				1
Amaurosis	1			1					1
Dacryocystitis								1	1
Stricture of nasal duct								1	1
Blepharitis	1			1					1
Stye								2	2
Chalazion								1	1
DISEASES OF THE EAR		4	1	3				23	27
Inflammation of the external meatus, acute								2	2
Abscess of the external meatus								1	1
Accumulation of wax								7	7
Inflammation of the middle ear		4	1	3				11	15
Obstruction of Eustachian tube								2	2
DISEASES OF THE NOSE		6	1	5				72	78
Hypertrophy								2	2
Inflammation								3	3
Nasal catarrh		6	1	5				66	72
Ozæna								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE PACIFIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE CIRCULATORY SYSTEM	4	28		21	2	5	4	40	72
Endocarditis		2		2					2
Valvular disease:									
Aortic	2	6		7			1	5	13
Mitral		5		3		1	1	12	17
Hypertrophy of heart		3		2	1			3	6
Degeneration of heart, fatty		2		1		1		1	3
Palpitation and irregular action of heart		4		4				7	11
Aneurism of arteries	1	4		1		3	1		5
Obstruction of arteries	1						1	1	2
Phlebitis								1	1
Varix		2		1	1			6	8
Thrombosis								4	4
DISEASES OF THE RESPIRATORY SYSTEM	11	113	68	40	3	7	6	337	461
Laryngitis:									
Acute								5	5
Chronic								2	2
Catarrhal								1	1
Bronchitis:									
Acute	3	31	23	10	1			227	261
Chronic	2	13	5	9			1	59	74
Catarrhal		1	1						1
Spasmodic asthma	1	8	2	6			1	12	21
Passive congestion of lung		2	1		1			1	3
Hemorrhage of lung		3		2	1			3	6
Pneumonia	2	29	24	3		3	1	2	33
Cirrhosis of lung								1	1
Pneumonic phthisis, chronic		2				2			2
Emphysema		1		1					1
Pleurisy:									
Acute	1	18	9	8			2	19	38
Chronic		2	1	1				1	3
Empyema	2	3	2			2	1	4	9
DISEASES OF THE DIGESTIVE SYSTEM	7	105	65	37	2	4	4	432	544
Ulcer of the lips								1	1
Stomatitis		1	1						1
Ulcerative stomatitis	1		1					1	2
Abscess of the antrum		1					1	1	2
Caries of dentine and cementum								23	23
Abscess of dental periosteum		2	1	1				5	7
Inflammation of gums and alveoli								1	1
Toothache								1	1
Sore throat		2	1	1				38	40
Quinsy		4	4					3	7
Follicular tonsilitis		9	7	2				31	40
Ulceration of fauces		1	1						1
Inflammation of salivary glands								2	2
Salivation		1	1					1	2
Follicular inflammation of the pharynx		1		1				5	6
Ulceration of the pharynx		1	1						1
Inflammation of the stomach		15	7	7		1		66	81
Dilatation of the stomach		1		1				4	5
Dyspepsia	2	15	8	9				60	77
Inflammation of the intestines:									
Catarrhal	1	1	1	1				6	8
Ulcerative		5	4			1		1	6
Ulcer of the intestines		1		1					1
Obstruction of the intestines		1	1						1
Hernia		13	7	4		1		53	66
Diarrhœa	1	6	6	1				34	41
Constipation								38	38
Colic								1	1
Abscess of the rectum		3	3					3	6

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE PACIFIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE DIGESTIVE SYSTEM—Continued.									
Piles:									
Internal	......	6	4	2	......	....	......	18	24
External	......	1	......	......	......	....	1	9	10
Fistula in ano	1	5	3	1	1	....	1	10	16
Congestion of the liver	1	......	1	......	......	....	......	5	6
Hepatitis	......	4	1	2	......	....	1	5	9
Cirrhosis of liver	......	1	......	1	......	....	......	......	1
Jaundice	......	1	......	1	......	....	......	6	7
Peritonitis	......	3	1	1	......	1	......	......	3
DISEASES OF THE LYMPHATIC SYSTEM	3	42	22	17	1	....	5	70	115
Inflammation of lymph glands	3	24	16	11	......	....	......	32	59
Suppuration of lymph glands	......	18	6	6	1	....	5	38	56
DISEASES OF THE URINARY SYSTEM	4	39	7	23	......	9	4	43	86
Acute nephritis	......	6	1	3	......	2	......	1	7
Bright's disease	3	16	......	10	......	6	3	10	29
Pyelitis	......	1	......	1	......	....	......	......	1
Movable kidney	......	......	......	......	......	....	......	1	1
Hæmaturia	......	2	......	2	......	....	......	......	2
Inflammation of bladder:									
Acute	......	7	3	4	......	....	......	21	28
Subacute	......	1	1	......	......	....	......	2	3
Chronic	......	2	......	1	......	....	1	4	6
Calculus of bladder	......	1	1	......	......	....	......	......	1
Irritability of bladder	1	2	1	2	......	....	......	2	5
Retention of urine	......	1	......	......	......	1	......	2	3
DISEASES OF THE GENERATIVE SYSTEM	12	93	40	55	6	....	4	304	409
Urethritis	......	1	......	1	......	....	......	8	9
Gleet	......	1	......	1	......	....	......	9	10
Urinary abcess	1	1	......	2	......	....	......	......	2
Stricture of urethra:									
Organic	7	30	9	24	3	....	1	108	145
Traumatic	......	1	......	1	......	....	......	......	1
Urinary fistula	......	2	......	2	......	....	......	......	2
Chronic inflammation of prostate gland	......	......	......	......	......	....	......	3	3
Abcess of prostate gland	......	1	......	1	......	....	......	......	1
Inflammation of glans penis	......	......	......	......	......	....	......	5	5
Abscess of penis	......	1	......	1	......	....	......	......	1
Ulcer of penis	3	24	12	12	......	....	3	116	143
Phimosis	1	2	2	1	......	....	......	2	5
Paraphimosis	......	1	......	1	......	....	......	1	2
Abscess of the scrotum	......	1	......	1	......	....	......	......	1
Hydrocele of spermatic cord	......	1	......	......	1	....	......	......	1
Varicocele	......	3	1	......	2	....	......	7	10
Hydrocele of tunica vaginalis	......	3	2	1	......	....	......	5	8
Orchitis:									
Acute	......	12	8	4	......	....	......	14	26
Chronic	......	......	......	......	......	....	......	3	3
Epididymitis	......	7	5	2	......	....	......	5	12
Spermatorrhœa	......	......	......	......	......	....	......	18	18
Inflammation of the uterus	......	1	1	......	......	....	......	......	1
DISEASES OF THE ORGANS OF LOCOMOTION	4	30	11	13	4	....	6	32	66
Ostitis	......	......	......	......	......	....	......	3	3
Periostitis	......	1	......	1	......	....	......	1	2
Caries	......	3	1	2	......	....	......	4	7
Necrosis	2	9	5	4	2	....	......	4	15
Synovitis:									
Acute	......	3	1	1	......	....	1	4	7
Chronic	......	4	......	......	1	....	3	1	5

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

THE PACIFIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE ORGANS OF LOCOMOTION—Continued.									
Ankylosis		1	1					1	2
Degeneration of cartilage	1						1		1
Relaxation of ligaments		1		1					1
Psoas, lumbar, and other abscesses		1					1		1
Inflammation of muscles								2	2
Abcess of muscles		2		2				3	5
Hypertrophy of muscles	1				1				1
Atrophy of muscles		2		2					2
Inflammation of tendons								3	3
Inflamed bursa		3	3					5	8
Ganglion								1	1
DISEASES OF THE CONNECTIVE TISSUE	3	40	22	15	2		4	52	95
Inflammation	1	8	6	3				15	24
Abscess	2	32	16	12	2		4	37	71
DISEASES OF THE SKIN	9	95	51	42	1		10	239	343
Urticaria								6	6
Eczema	2	12	5	8			1	48	62
Pityriasis		1	1					1	2
Lichen								4	8
Psoriasis		1		1				3	4
Herpes	1	1	2					6	4
Zona		1	1					1	2
Pemphigus								2	2
Acne								1	1
Sycosis								2	2
Steatorrhœa								1	1
Chloasma								1	1
Frostbite		4	1	3				4	8
Ulcer	6	57	28	25	1		9	94	157
Fissures								1	1
Boil		4	3	1				36	40
Carbuncle		5	3	2				2	7
Gangrene		1	1						1
Whitlow		7	5	2				15	22
Onychia		1	1					3	4
Corn								1	1
Lupus								1	1
Wen								6	6
PARASITIC DISEASES OF THE SKIN		5	4		1			12	17
Ringworm								5	5
Favus								1	1
Tinea versicolor								2	2
Itch		3	3					3	6
Phthiriasis								1	1
Unclassified		2	1		1				2
Poisons		2	1				1	4	6
Metals and their salts								1	1
Vegetable poisons		2	1				1	3	5
Injuries	**31**	**330**	**212**	**109**	**3**	**5**	**32**	**466**	**827**
GENERAL INJURIES	2	21	13	3		3	4	48	71
Burns and scalds	2	12	8	1		3	2	9	23
Effects of cold		3	2	1				37	40
Multiple injury		6	3	1			2	1	7
Exhaustion								1	1
LOCAL INJURIES	29	309	199	106	3	2	28	418	756
Compression of nerves		1	1						1
Wound of nerve		1					1		1

Table VII.—Tabular Statement, by Districts, of Diseases and Injuries Treated during the Year ended June 30, 1893—Continued.

THE PACIFIC—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Injuries—Continued.									
Local Injuries—Continued.									
Strain of muscles		4	3				1	8	12
Rupture of tendons								1	1
Abrasion of skin								1	1
Contusion of scalp		3	3					8	11
Scalp wound, bone not exposed	1	17	10	5		1	2	15	33
Fracture of the vault of the skull								1	1
Contusion of face		2	1	1				8	10
Wound of face and mouth		10	7	3				18	28
Fracture of facial bones		5	3	2				2	7
Dislocation of nasal cartilages		1		1					1
Contusion of the eye		1			1				1
Foreign body in cornea or conjunctiva								3	3
Wound of pinna		1	1					1	2
Foreign body in external meatus								2	2
Contusion of soft parts of neck								1	1
Wound of neck	1	1	1	1					2
Contusion of the chest		7	5	2				16	23
Fracture of the ribs	1	16	9	6	1		1	18	35
Wound of parietes of chest		2	2						2
Contusion of back	1	14	7	7		1		11	26
Sprain of back	1	10	8	3				18	29
Wound of back	1	1	2					1	3
Fracture of spine		1					1		1
Concussion of cord		1		1					1
Wound of parietes of abdomen								3	3
Contusion of the pelvis								1	1
Contusion of the urethra, perineum, scrotum, and penis	1	2	1	2				2	5
Wound of the urethra, perineum, scrotum and penis		1	1					1	2
Rupture of urethra	1		1					1	2
Contusion of testicle								1	1
Contusion of upper extremities	2	5	3	2			2	34	41
Sprain of the shoulder		3	2	1				5	8
Sprain of the wrist		5	2	3				12	17
Sprain of the fingers								2	2
Wound of the upper extremities	4	40	20	20			4	118	162
Fracture of the clavicle		6	6						6
Fracture of the scapula								2	2
Fracture of the humerus		1			1			3	4
Fracture of the radius		2		1			1	1	3
Fracture of the ulna		2	1	1				1	3
Fracture of both bones of forearm		5	3	2				4	9
Fracture of carpus, metacarpus, and phalanges		4	4					9	13
Dislocation of the humerus	1	7	4	4				3	11
Dislocation of the ulna		1		1					1
Dislocation of the radius and ulna		1	1						1
Dislocation of the metacarpus								1	1
Dislocation of the phalanges of fingers		1	1						1
Contusion of the lower extremities	2	40	32	10				34	76
Sprain of the hip		5	1	3			1	1	6
Sprain of the knee		7	4	2			1	6	13
Sprain of the ankle	2	21	11	10			2	14	37
Wound of the lower extremities	1	16	12	4			1	17	34
Fracture of femur	2	6	3				5	2	10
Fracture of leg, both bones	5	6	5	4			2	3	14
Fracture of tibia alone	2	7	7	2					9
Fracture of fibula alone		9	5	2			2	4	13
Dislocation of the femur at the hip		1	1						1
Dislocation of the knee		1					1		1
Amputations		5	5						5
Amputation of fingers		5	5						5

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

QUARANTINE.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved				
TOTAL CASES		**113**	**51**	**58**		**3**	**1**	**85**	**198**
General Diseases		**79**	**21**	**55**		**3**		**18**	**97**
Smallpox		1				1			1
Chickenpox		2		2					2
Measles		49		49					49
Simple continued fever		2	2					1	3
Yellow fever		18	16			2			18
Dysentery		1		1				1	2
Malarial intermittent fever		2	2					3	5
Beri-beri		1		1					1
Erysipelas, simple								2	2
Syphilis, secondary								1	1
Gonorrhœa								4	4
Debility		3	1	2					3
Rheumatism								6	6
Local Diseases		**13**	**11**	**1**			**1**	**55**	**68**
DISEASES OF THE NERVOUS SYSTEM								6	6
Locomotor ataxy								1	1
Neuralgia								3	3
Facial								1	1
Chorea								1	1
DISEASES OF THE EAR								1	1
Abscess of the external meatus								1	1
DISEASES OF THE NOSE								1	1
Ozæna								1	1
DISEASES OF THE CIRCULATORY SYSTEM		1		1				1	2
Valvular disease, mitral		1		1				1	2
DISEASES OF THE RESPIRATORY SYSTEM		2	1				1	10	12
Laryngitis, acute								2	2
Bronchitis:									
Acute								4	4
Chronic								4	4
Pneumonia		2	1				1		2
DISEASES OF THE DIGESTIVE SYSTEM		10	10					23	33
Abscess of dental periosteum								1	1
Toothache								1	1
Sore throat								1	1
Follicular tonsilitis								2	2
Dyspepsia								3	3
Gastrodynia								1	1
Diarrhœa		10	10					5	15
Constipation								4	4
Colic								5	5
DISEASES OF THE URINARY SYSTEM								2	2
Inflammation of bladder, acute								1	1
Retention of urine								1	1
DISEASES OF THE GENERATIVE SYSTEM								2	2
Ulcer of penis								2	2
DISEASES OF THE ORGANS OF LOCOMOTION								1	1
Caries								1	1
DISEASES OF THE SKIN								7	7
Urticaria								1	1
Eczema								2	2
Ulcer								1	1
Boil								3	3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1893—Continued.

QUARANTINE—Continued.

DISEASES.	NUMBER OF CASES.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
PARASITIC DISEASES OF THE SKIN								1	1
Tinea versicolor								1	1
Injuries		**21**	**19**	**2**				**12**	**33**
GENERAL INJURIES		18	18						18
Heat stroke		1	1						1
Exhaustion		17	17						17
LOCAL INJURIES		3	1	2				12	15
Contusion of back								1	1
Sprain of back								2	2
Contusion of upper extremities								3	3
Dislocation of the humerus		1		1					1
Dislocation of the metacarpus								1	1
Sprain of the ankle								1	1
Wound of the lower extremities		1	1					4	5
Fracture of leg, both bones		1		1					1

TABLE VIII.—TABULAR STATEMENT, BY DISTRICTS, OF CAUSES OF MORTALITY AMONG PATIENTS OF THE SERVICE DURING THE YEAR ENDED JUNE 30, 1893.

Causes of death.	Total.	Districts.								
		North Atlantic.	Middle Atlantic.	South Atlantic.	The Gulf.	The Ohio.	The Mississippi.	The Great Lakes.	The Pacific.	Quarantine stations.
Total Deaths from all Causes	**478**	**45**	**78**	**72**	**44**	**42**	**53**	**75**	**66**	**3**
FROM DISEASES	435	44	75	68	41	40	35	68	61	
FROM INJURY	43	1	3	4	3	2	18	7	5	
General Diseases	**228**	**25**	**31**	**33**	**18**	**27**	**20**	**40**	**31**	**3**
Smallpox										1
Influenza					1	1	3	3		
Diphtheria					1					
Cerebro-spinal fever						1				
Enteric fever		8	2	7	1	3	2	6	1	
Typho-malarial fever				1						
Yellow fever										2
Dysentery			1	3	3				1	
Malarial intermittent fever		1	2	2	1		1			
Malarial remittent fever			2	4	1		4	1		
Beri-beri		1								
Phagedæna					1		1			
Syphilis, secondary		1			1	2		3	1	
Gonorrhœa						1			1	
Scurvy									1	
Alcoholism				1				3		
Rheumatic fever								1		
Rheumatism			1	1	1			1	2	
Osteoarthritis									1	
Malignant new growth		1	1			1	1	1		
Tubercle		12	21	14	7	17	8	20	22	

TABLE VIII.—TABULAR STATEMENT, BY DISTRICTS, OF CAUSES OF MORTALITY AMONG PATIENTS OF THE SERVICE DURING THE YEAR ENDED JUNE 30, 1893—Continued.

Causes of death.	Total.	Districts.								
		North Atlantic.	Middle Atlantic.	South Atlantic.	The Gulf.	The Ohio.	The Mississippi.	The Great Lakes.	The Pacific.	Quarantine stations.
General Diseases—Continued.										
Scrofula						1				
Leprosy		1								
Purpura			1							
Leucocythæmia								1		
Diabetes mellitus									1	
Local Diseases	**207**	**19**	**44**	**35**	**23**	**13**	**15**	**28**	**30**	
DISEASES OF THE NERVOUS SYSTEM	21	2	3	6	3		1	1	5	
Hemorrhage, cerebral								1		
Inflammation:										
Of brain and its membranes			2							
Of cerebral membranes		1		2						
Spinal meningitis				1						
Myelitis				1			1			
Locomotor ataxy			1		1				1	
Apoplexy				1						
Hemiplegia		1		1	2				3	
Local paralysis									1	
MENTAL DISEASES	2			1	1					
Mania				1						
Dementia					1					
DISEASES OF THE NOSE	1			1						
Caries				1						
DISEASES OF THE CIRCULATORY SYSTEM	43	4	3	9	5	4	4	9	5	
Pericarditis						1	1			
Valvular diseases:										
Aortic		3	1	3	1	1	2	3	1	
Mitral			2	5	3	2		5		
Degeneration of heart, fatty									1	
Dilatation of heart								1		
Aneurism of arteries		1		1	1		1		3	
DISEASES OF THE RESPIRATORY SYSTEM	64	4	23	9	8	2	3	8	7	
Bronchitis:										
Acute				1	2			2		
Chronic		1			2					
Spasmodic asthma			1	1						
Pneumonia		3	15	5	3	2	3	4	3	
Pneumonic phthisis:										
Acute				1					2	
Chronic			7	1	1					
Pleurisy, acute								1		
Empyema								1	2	
DISEASES OF THE DIGESTIVE SYSTEM	34	3	6	5		4	5	7	4	
Sore throat						1				
Follicular tonsilitis						1				
Inflammation of the stomach			3			1	1	1	1	
Ulceration of the stomach		1								
Inflammation of the intestines							2	2	1	
Abscess in the subperitoneal tissue								1		
Obstruction of the intestines		1								
Hernia				1			1		1	
Diarrhœa			1	1				1		
Colic		1								
Abscess of the rectum						1				
Atrophy of the liver				1						
Cirrhosis of the liver			1					1		
Lardaceous liver							1			
Peritonitis			1	2				1	1	

TABLE VIII.—TABULAR STATEMENT, BY DISTRICTS, OF CAUSES OF MORTALITY AMONG PATIENTS OF THE SERVICE DURING THE YEAR ENDED JUNE 30, 1893—Continued.

Causes of death.	Total.	Districts.								
		North Atlantic.	Middle Atlantic.	South Atlantic.	The Gulf.	The Ohio.	The Mississippi.	The Great Lakes.	The Pacific.	Quarantine stations.
Local Diseases—Continued.										
DISEASES OF THE URINARY SYSTEM	31	5	5	3	4	2	......	3	9	......
Acute nephritis	......	1	......	......	1	1	......	......	2	......
Bright's disease	......	4	4	1	3	1	......	2	6	......
Inflammation of bladder:										
Acute	......	......	......	......	......	......	......	1	......	......
Chronic	......	......	......	2	......	......	......	......	......	......
Retention of urine	......	......	1	......	......	......	......	......	1	......
DISEASES OF THE GENERATIVE SYSTEM	7	......	3	1	2	......	1	......	......	......
Stricture of urethra, organic	......	......	2	1	1	......	1	......	......	......
Ulcer of penis	......	......	1	......	......	......	......	......	......	......
Orchitis, acute	......	......	......	......	1	......	......	......	......	......
DISEASES OF THE ORGANS OF LOCOMOTION	3	1	......	......	......	1	1	......	......	......
Caries	......	......	......	......	......	1	......	......	......	......
Necrosis	......	......	......	......	......	......	1	......	......	......
Caries and necrosis of spine	......	1	......	......	......	......	......	......	......	......
DISEASES OF THE CONNECTIVE TISSUE	1	......	1	......	......	......	......	......	......	......
Inflammation	......	......	1	......	......	......	......	......	......	......
Injuries	**43**	**1**	**3**	**4**	**3**	**2**	**18**	**7**	**5**	......
GENERAL INJURIES	22	......	......	......	1	......	14	4	3	......
Burns and scalds	......	......	......	......	1	......	14	3	3	......
Multiple injury	......	......	......	......	......	......	......	1	......	......
LOCAL INJURIES	21	1	3	4	2	2	4	3	2	......
Scalp wound:										
Bone not exposed	......	......	......	......	......	......	1	......	1	......
Bone exposed	......	......	......	1	......	......	......	......	......	......
Fracture of the vault of the skull	......	......	1	1	1	1	......	......	......	......
Compression of brain	......	......	1	......	......	......	......	......	......	......
Contusion of face	......	......	......	1	......	......	......	......	......	......
Fracture of facial bones	......	1	......	......	......	......	......	......	......	......
Wound of the parietes of the chest	......	......	......	......	......	1	......	......	......	......
Contusion of back	......	......	......	......	......	......	......	......	1	......
Fracture of the spine	......	......	......	......	......	......	......	1	......	......
Dislocation of spine	......	......	......	......	......	......	......	1	......	......
Wound of the parietes of abdomen	......	......	......	......	......	......	1	......	......	......
Fracture and dislocation of the pelvis	......	......	......	......	......	......	......	1	......	......
Wound of the upper extremities	......	......	1	......	......	......	......	......	......	......
Fracture both bones of forearm	......	......	......	......	1	......	......	......	......	......
Contusion of the lower extremities	......	......	......	1	......	......	......	......	......	......
Fracture of femur	......	......	......	......	......	......	2	......	......	......

TABLE IX.—SURGICAL OPERATIONS, FISCAL YEAR 1893.

Operations.	Number of cases.	Remarks.
Total Number of Operations	**627**	
REMOVAL OF TUMORS	24	
For fatty tumor of forehead	1	Enucleation; successful.
For lipoma of forehead	2	Extirpation; successful.
For fibroma of forehead	3	Enucleation; successful.
For fibroma of lip	2	Excision; successful.
For fatty tumor of neck	1	Incision and enucleation; successsful.
For sebaceous tumor of neck	3	Removal 2, excision 1; improved.
For lipoma of back	1	Extirpation.
For fibroma of penis	3	Removal.
For sarcoma of penis	1	Excision.
For cystic tumor of testicles	3	Testicles removed; under treatment.
For sebaceus cyst of hip	3	Sac dissected out.
For cystic tumor of leg	1	Excision; under treatment.
REMOVAL OF FOREIGN BODIES	9	
For foreign body in pharynx	2	Removal; successful.
For gunshot wound, abdomen	1	Ball extracted; successful.
For foreign body in rectum	1	Removal; successful.
For gunshot wound, face	1	Ball extracted; successful.
For foreign body in hand	3	Removal; successful.
For foreign body in foot	1	Do.
OPENING OF ABSCESSES	32	
For abscess nasal duct	1	Canalicular slit, probe passed.
For abscess jaw	2	Incision and scraping.
For abscess connective tissue, neck	5	Do.
For abscess of axilla	3	Incision and counter opening, 2; cavity drained, 1.
For abscess perineum	2	Incision and drainage.
For tubercular abscess testicles	4	Castration 2; testicles enucleated, 2.
For abscess connective tissue finger	2	Incision.
For thecal abscess	1	Do.
For abscess of hip	2	Opened and cavity drained.
For abscess muscles, buttock	7	Aspiration, 1; exploration and evacuation, 6.
For abscess muscles of thigh	3	Incision and drainage.
OPERATIONS ON THE NERVES	8	
For sciatica	7	Forced flexion, 3; exposing and stretching nerve, 4.
For division of ulnar nerve	1	Nerve grafting.
OPERATIONS ON THE EYE	11	
For pterygium	3	Excision.
For opacity of cornea	4	Iridectomy.
For cataract	2	Extraction of lens; unsuccessful.
For suppuration keratitis	1	Iridectomy.
For panophthalmitis	1	Enucleation of eyeball; successful.
OPERATIONS ON THE NOSE	7	
For nasal polypus	1	Removal and cauterization; successful.
For catarrh of nose	3	Polypoid tissue snared from turbinate bone; successful.
For catarrh of pharynx	3	Polypoid tissue snared, 2; sawing off spur from septum, 1.
OPERATIONS ON THE HEAD AND MOUTH	12	
For inflammation cerebral membrane	1	Trephined.
For fracture of skull	1	Removal of diseased bone.
For epilepsy	2	Trephining of skull.
For scalp wound, bone exposed	2	Bone scraped.
For scalp wound, bone not exposed	1	Sutured.
For suppuration dental periosteum	1	Tooth extracted and abscess of neck drained.
For epithelioma of lip	4	V-shaped piece removed, 3; incision, 1; recovered.
OPERATIONS ON THE ARTERIES	5	
For aneurism facial artery	2	Ligation.
For aneurism of thigh	3	Ligated external iliac; recovered.
OPERATIONS ON VEINS	27	
For varicocele	15	Veins ligated, 5; obliteration of varices, 10.
For varicose veins of rectum	4	Cauterization.
For varicose veins of leg	6	Obliteration of varices.
For varicose veins of both legs	2	Excision.

TABLE IX.—SURGICAL OPERATIONS, FISCAL YEAR 1893—Continued.

Operations.	Number of cases.	Remarks.
OPERATIONS ON THE RESPIRATORY ORGANS	18	
For hydrothorax	3	Paracentesis of plural cavity, improved.
For pleurisy with effusion	7	Paracentesis (aspirated), 3; improved; unsuccessful, 4.
For empyema	7	Incisive and drainage, 4; resection of rib, 3.
For œdema of glottis	1	Tracheotomy, died.
OPERATIONS ON THE ORGANS OF DIGESTION	66	
For hernia, inguinal	8	Cutting sac.
For hernia, oblique	6	Radical cure, 4; McBirney's operation, 2.
For hernia, irreducible	5	Sac opened and ligated.
For hernia, strangulated	4	Herniotomy, McBirney's operation.
For appendicitis	1	Appendix ligated and removed, died.
For ascites	1	Paracentesis of abdomen.
For intestinal anastomosis	1	Laparotomy.
For strangulated acclusion of bowel	1	Do.
For suppuration, perityphlitic	1	Do.
For stricture of rectum	4	Posterior linear rectotomy.
For fistula in ano	15	Incision, 7; incision and curetting, 8.
For hæmorrhoids	19	Ligated, 12; sphincter ani dilated, 7.
OPERATIONS ON THE LYMPHATIC ORGANS	53	
For inflammation of lymph. glands, groin	36	Excision, 16; enucleation, 20.
For suppuration of lymph. glands, neck	7	Excised and packed.
For suppuration of inguinal glands	10	Excision.
OPERATIONS ON THE URINARY ORGANS	123	
For traumatic perineal fistula	4	Supra pubic cystotomy.
For rupture of urethra	3	Median lithotomy.
For fistula in urethra	7	Cystotomy.
For stricture of urethra		Recovered.
Gradual dilatation	35	
Forcible dilatation	24	
Internal urethrotomy	29	
External urethrotomy	10	
For urinary fistula	7	Operation for urinary fistula.
For rupture of the perineum	3	Renewal and suturing.
For vesical calculus	1	Lithotomy and evacuation.
OPERATIONS ON THE ORGANS OF GENERATION	148	
For phimosis	35	Circumcision, 15; pepuce slit and ligated, 20.
For phimosis and bubo	19	Circumcision, 9; operation for phimosis, 10.
For ulcer of penis	13	Circumcision, 8; foreskin slit, 5.
For ulcer of penis and venereal warts	11	Circumcision, 4, warts cut off, 7.
For œdema of penis	1	External urethrotomy.
For paraphimosis	14	Reduced, 4; circumcision, 10.
For hypospadias	3	Constriction, edges freshened and sutured.
For hydrocele	9	Incision of sac.
For hydrocele tunica vaginalis	24	Aspirated, 9; radical cure, 15.
For hydrocele testis	2	Tapping and injected acid carbol
For hypertrophy of testicles	3	Castration.
For gumma of testicles	1	Do.
For tubercle of testicles	8	Castration, 3; enucleation, 5.
For syphilis	5	Indurated glands removed.
OPERATIONS ON BONES	28	
For fracture of femur	1	Plaster cast, and traction.
For fracture of spine	2	Pieces of bone removed, and vertebræ wired.
For fracture of clavicle	2	Removal of bone.
For necrosis of frontal bone	1	Bone removed.
For necrosis of nasal bone	1	Removed with gouge.
For fracture of radius	3	Reduction and splint.
For fracture of ulna	2	Partial excision.
For necrosis of hand	3	Bone scraped.
For necrosis of finger	4	Extraction of bone.
For fracture of patella	3	Direct fixation of fragments by wiring.
For fracture of tibia	2	Freshened and wired.
For caries of tibia	4	Bone scraped and chiseled.
OPERATIONS ON THE ORGANS OF LOCOMOTION	13	
For fracture of knee joint	3	Fixation of fragments by wiring.
For dropsy of knee joint	2	Aspiration.
For morbus coxæ	1	Aspiration of hip joint; unsuccessful.
For synovitis of knee	4	Aspirated.

TABLE IX.—SURGICAL OPERATIONS, FISCAL YEAR 1893—Continued.

Operations.	Number of cases.	Remarks.
OPERATIONS ON THE ORGANS OF LOCOMOTION—Cont'd.		
For ankylosis of knee	1	Forcible flexion.
For lacerated wound, lower extremity	1	Nail removed.
For tuberculosis of ankle	1	Partial excision.
OPERATIONS ON THE TENDONS	11	
For contraction hamstring tendon	1	Subcutaneous tenotomy; under treatment.
For inflammation bursa, patella	9	Aspirated, 4; incision, 5.
For talipes equino-varus, feet	1	Tenotomy.
AMPUTATIONS	27	
Hand for frostbite	1	
Hand for gangrene	2	
Hand for contused wound	1	
Hand for cicatrix	1	
Fingers for frostbite	3	
Fingers for caries	4	
Fingers for necrosis	2	
Fingers for contused wound	3	
Fingers for poisoned wound	2	
Fingers for ankylosis	1	
Fingers for unhealed stump	1	
Leg for fracture	2	
Leg for lacerated wound	1	
Feet for frostbite	2	
Toe for neuralgia	1	
OPERATIONS ON THE SKIN	5	
For ulcer, skin of arm	1	Curetted; under treatment.
For ulcer, skin of perineum	1	Do.
For ulcer, skin of leg	2	Skin grafting.
For ulcer, skin of foot	1	Do.

TABLE X.—RATIO OF DEATHS FROM SPECIFIC CAUSES.

Deaths from—	Per 100 from all causes.	Deaths from—	Per 100 from all causes.
General diseases	47.70	Diseases of the digestive system	7.11
Diseases of the nervous system	4.81	Diseases of the urinary system	6.48
Diseases of the circulatory system	8.99	Injuries	8.99
Diseases of the respiratory system	13.38	From all other causes	2.54

TABLE XI.—RATIO OF DEATHS IN EACH DISTRICT.

Districts.	Per 100 patients treated in hospital.	Districts.	Per 100 patients treated in hospital.
North Atlantic	2.46	The Mississippi	3.64
Middle Atlantic	3.69	The Great Lakes	2.76
South Atlantic	3.37	The Pacific	3.73
The Gulf	3.29	The quarantine stations	2.65
The Ohio	3.01		

TABLE XII.—COMPARATIVE EXHIBIT.—MORTALITY PER 100 PATIENTS TREATED IN HOSPITAL, BY DISTRICTS, 1884–1893.

Districts.	General average.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.
North Atlantic	3.06	3.59	3.95	3.09	3.04	3.53	3.25	2.65	2.50	2.62	2.46
Middle Atlantic	3.96	3.87	3.34	3.27	4.85	4.80	3.92	4.66	3.77	3.44	3.69
South Atlantic	3.13	2.86	3.05	3.54	3.53	2.54	3.55	3.64	2.56	2.71	3.37
The Gulf	3.34	4.10	2.49	2.96	3.82	2.78	3.08	3.40	3.88	3.63	3.29
The Ohio	2.77	4.33	2.43	3.05	3.06	2.01	3.52	2.26	2.54	1.53	3.01
The Mississippi	3.60	4.08	2.93	2.79	4.19	4.78	3.52	3.04	3.67	3.37	3.64
The Great Lakes	2.86	3.07	2.79	2.37	2.72	2.83	2.93	2.63	2.44	4.11	2.76
The Pacific	4.35	4.88	3.30	5.72	4.59	4.45	4.22	4.42	4.43	3.83	3.73

TABLE XIII.—COMPARATIVE EXHIBIT.—RATIO OF DEATHS FROM SPECIFIC CAUSES, 1884–1893.

Deaths from—	General average.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.
General diseases	47.54	48.67	46.61	48.40	45.63	46.58	45.47	50.20	52.66	43.42	47.70
Diseases of the—											
Nervous system	5.34	4.40	8.07	4.91	4.79	6.84	5.69	4.06	3.69	6.05	4.81
Circulatory system	8.49	6.14	10.42	9.09	7.29	10.04	7.58	5.81	9.84	9.60	8.99
Respiratory system	15.74	13.90	14.06	16.22	17.50	14.96	17.26	19.10	15.16	15.85	13.38
Digestive system	7.59	9.20	9.90	7.37	7.08	8.97	7.37	6.30	5.33	7.30	7.11
Urinary system	5.37	7.36	5.21	4.18	6.25	5.34	4.63	4.67	4.71	4.80	6.48
Injuries	6.31	5.94	3.39	5.41	7.92	4.50	8.00	5.81	5.33	7.72	8.99
From all other causes	3.62	4.30	2.34	4.42	3.54	2.77	4.00	3.65	3.28	5.26	2.54

TABLE XIV.—COMPARATIVE EXHIBIT.—AVERAGE DURATION OF TREATMENT IN HOSPITAL IN EACH DISTRICT, 1884–1893.

Districts.	General average.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.
North Atlantic	27.50	30.13	30.22	26.56	23.89	26.76	30.05	29.21	29.68	24.37	24.12
Middle Atlantic	26.74	26.84	25.32	25.84	29.21	26.99	26.92	26.32	26.81	26.87	26.29
South Atlantic	26.86	23.46	26.06	26.72	27.99	26.53	27.91	28.27	26.19	26.26	29.23
The Gulf	21.52	19.97	18.63	19.43	20.82	23.24	24.55	28.21	21.07	21.97	22.33
The Ohio	23.19	22.56	23.18	23.61	21.87	21.62	22.52	24.52	24.92	23.81	23.37
The Mississippi	20.87	18.16	20.28	20.79	21.72	21.23	22.60	20.88	22.61	20.59	19.84
The Great Lakes	27.79	29.75	28.10	28.61	26.31	26.72	29.69	30.82	27.09	27.82	27.07
The Pacific	32.92	31.04	31.09	29.74	29.72	29.96	31.12	33.68	32.68	36.92	40.27

TABLE XV.—STATEMENT OF MORTALITY OF PASSENGERS ON VOYAGES FROM FOREIGN PORTS TO THE UNITED STATES, JULY 1, 1892, TO JUNE 30, 1893.

Date.	Name of vessel.	Where from.	Sex.	Age.	Cause of death as reported to customs officer.
Mar. 16	Alameda	Sydney	Male	60	
Mar. 22	Alesia	Mediterranean ports	do	30	Pneumonia.
May 19	do	do	do	55	Heart disease.
Mar. 8	Alsatia	do	do	34	Do.
June 15	do	do	do	32	Inflammation of bowels.
July 2	Anchonia	Glasgow	Female	25	Conjestion of lungs.
Apr. 1	Assyria	Mediterranean ports	Male	23	Heart disease.
May 9	Belgravia	Aconna, etc	do	42	Syncope.
May 9	do	do	do	32	Pneumonia.
May 9	do	do	do	57	Syncope.
May 9	do	do	Female	8	Convulsions.
Nov. 18	Belgenland	Antwerp	do	27	Pneumonia.
Oct. 8	Bohemia	Hamburg	Male	8	Diarrhœa.
Oct. 8	do	do	do	23	Enteritis.
Oct. 8	do	do	do	25	Do.
Nov. 30	Braunschweig	Bremen	Female	18	Puerperal fever.
July 2	Britannia	Marseilles	Male	23	Consumption.
Mar. 30	British Princess	Liverpool	Female	11	Pneumonia.
Jan. 19	Burgundia	Mediterranean ports	do	10	Diphtheria.
Apr. 27	California	Hamburg	do	30	Enteritis.

TABLE XV.—STATEMENT OF MORTALITY OF PASSENGERS ON VOYAGES FROM FOREIGN PORTS TO THE UNITED STATES, JULY 1, 1892, TO JUNE 30, 1893—Continued.

Date.	Name of vessel.	Where from.	Sex.	Age.	Cause of death as reported to customs officer.
June 5	California	Mediterranean ports	Female	10	Diphtheria.
July 16	Cephalonia	Liverpool	Male	58	Pneumonia.
May 12	Cheribon	Marseilles	do	45	Cerebral congestion.
Feb. 1	China	Hongkong	do	30	
Apr. 17	do	Yokohama	do	22	
Apr. 17	do	do	do	38	
Apr. 1	Colombo	Mediterranean ports	do	23	Meningitis.
Apr. 1	do	do	do	32	Pleurisy.
July 16	Columbia	Hamburg	do	41	Paralysis.
July 16	do	do	do	25	Pneumonia.
Apr. 17	Devonia	Glasgow	Female	25	Do.
Mar. 25	Dona Maria	Fayal	Male	9	Heart disease.
Apr. 25	Dresden	Bremen	do	24	Weakness.
Nov. 29	do	do	Female	68	Do.
May 20	Dubbledam	Amsterdam	do	34	Heart disease.
May 2	Edam	Bremen	do	16	Pneumonia.
Sept. 1	Elba	do	Male	60	Aneurism.
Dec. 19	Elysia	Mediterranean ports	do	26	Pneumonia.
Apr. 30	Furnessia	Glasgow	Female	17	Meningitis.
Sept. 1	Gallia	Liverpool	Male	24	Coma.
Aug. 12	Gera	Bremen	Female	9	Apoplexy of heart.
Feb. 25	Harlan	Bluefields, Nicaragua.	Male	31	Consumption.
Aug. 18	Hekla	Copenhagen	Female	63	Paralysis.
Apr. 9	do	do	do	4	Enteritis.
Apr. 9	do	do	do	18	Pneumonia.
Apr. 9	do	do	Male	50	Febris typhoid.
May 11	H. H. Meier	Bremen	do	21	Consumption.
Feb. 3	Hindoustan	Mediterranean ports	do	53	Heart disease.
May 7	do	Marsielles	do	30	Cancer of stomach.
Feb. 3	Indiana	Mediterranean ports	do	41	Pneumonia.
Feb. 3	do	do	do	66	Exhaustion.
Feb. 14	do	Liverpool	do	50	Phthisis pulmonalis.
Mar. 22	do	do	do	36	Heart failure.
Aug. 19	do	do	Female	10	Heart disease.
Apr. 23	Iniziativa	Mediterranean ports	Male	28	Pneumonia.
Oct. 31	Island	Copenhagen	Female	24	Consumption.
Apr. 23	Italia	Stettin	Male	8	Peritonitis
Aug. 14	Karamania	Mediterranean ports	do	40	Choleraic diarrhea.
Aug. 14	do	do	Female	47	Congestion of lungs.
July 21	Karlsruhe	Bremen	do	62	Heart disease.
Mar. 16	Lahn	do	Male	21	Pneumonia.
Sept. 21	Lord Cline	Liverpool	do	38	Delirium tremens.
Sept. 23	Moravia	Hamburg	do	8	Cholerine.
Sept. 23	do	do	Female	29	Do.
Sept. 23	do	do	do	30	Do.
Mar. 30	München	Bremen	Male	54	Apoplexy.
Apr. 7	Neustria	Mediterranean ports	do	24	Gastritis.
May 25	Obdam	Rotterdam	do	44	Heart failure.
July 21	Olympia	Mediterranean ports	Female	35	Premature labor.
May 20	Peruvian	Glasgow	do	11	Meningitis.
Mar. 25	Povonia	Liverpool	Male	24	Suicide.
Sept. 23	Rugia	Hamburg	Female	39	Tubercle of lungs.
Sept. 23	do	do	Male	11	Tuberculosis
Sept. 23	do	do	do	30	Cholera.
Apr. 25	do	do	do	42	Lung disease.
Sept. 29	Scandia	do	do	39	Tuberculosis.
Sept. 29	do	do	Female	25	Cholera.
Sept. 29	do	do	do	10	Do.
Sept. 29	do	do	do	36	Do.
Sept. 29	do	do	do	28	Do.
Sept. 29	do	do	do	10	Do.
Sept. 29	do	do	Male	60	Cachexia.
Sept. 29	do	do	Female	15	Cholera.
Sept. 29	do	do	Male	35	Heart disease.
Sept. 29	do	do	Female	78	Weakness.
Sept. 28	Schridam	Amsterdam	Male	14	Bronchitis.
June 15	Scythia	Liverpool	do	48	Delirium tremens.
July 19	do	do	do	11	Meningitis.
Apr. 3	Servia	do	Female	71	Pneumonia.
Nov. 30	Sorrento	Hamburg	do	54	Consumption.
Nov. 25	Veendam	Rotterdam	Male	35	Delirium tremens.
Nov. 29	Waesland	Antwerp	do	59	Pneumonia.
Nov. 29	Weimar	Bremen	Female	68	Weakness.
Nov. 29	do	do	Male	68	Brain fever.
May 30	do	do	do	29	Heart disease.
May 30	do	do	do	18	Pleurisy.
June 4	Weiland	Hamburg	do	9	Inflammation of bowels.
June 23	Werkendam	Rotterdam	do	68	Bronchitis.
Aug. 18	Weser	Mediterranean ports	do	23	Tuberculosis.
May 26	Zaandam	Rotterdam	do	15	Cerebral hemorrhage.

TABLE XVI.—NATIVITY OF PATIENTS TREATED IN U. S. MARINE HOSPITALS DURING THE FISCAL YEAR.

Countries.	Number.	Countries.	Number.
Total	13,950	Italy	193
		Japan	29
Africa	100	Mexico	25
Australia	12	New Zealand	5
Austria	103	Norway	718
Azore Islands	23	Philippine Islands	15
Canada	316	Poland	93
China	75	Portugal	15
Denmark	300	Prince Edward Islands	45
England	206	Russia	111
Fayal	36	Scotland	109
Finland	205	Spain	65
France	100	Sweden	690
Germany	603	Switzerland	100
Greece	16	United States of America	8,614
Holland	27	Wales	22
India	6	West Indies	100
Inland	798	Unknown	75

FINANCIAL STATEMENT.

FINANCIAL STATEMENT.

RECEIPTS AND EXPENDITURES, U. S. MARINE-HOSPITAL SERVICE, FOR THE FISCAL YEAR ENDED JUNE 30, 1893.

The balance available at the commencement of the fiscal year was $139,199.34, and the receipts from all sources were $554,200.86.

The expenditures were $586,238.02, leaving on hand at the close of the fiscal year a balance of $107,162.18.

SUMMARY.

Balance July 1, 1892	$139, 199. 34
Receipts:	
Tonnage tax collected	539, 233. 14
Repayments for care and treatment of foreign seamen, etc	14, 967. 72
Total available during fiscal year	693, 400. 20
Expenditures	586, 238. 02
Balance June 30, 1893	107, 162. 18

Summary of expenditures on account of the quarantine service, fiscal year ended June 30, 1893.

Stations.	Payments from the appropriation "quarantine service, 1893."	Payments from the appropriation "preventing the spread of epidemic diseases."	Total.
Cape Charles	$21, 197. 64	$2, 541. 23	$23, 738. 87
Delaware Breakwater	23, 292. 98	2, 360. 50	25, 653. 48
Gulf	14, 421. 80	1, 225. 96	15, 647. 76
Key West	10, 874. 37	538. 79	11, 413. 16
Port Townsend	2, 441. 79	369. 55	2, 811. 34
San Diego	3, 461. 65	335. 00	3, 796. 65
San Francisco	14, 403. 29	1, 536. 76	15. 940. 05
South Atlantic	10, 203. 73	945. 76	11, 149. 49
Miscellaneous	74. 25	93. 41	167. 66
Total	100, 371. 50	9, 946. 96	110, 318. 46

Preventing the spread of epidemic diseases.

Balance, July 1, 1892		$110, 261. 20
Amount appropriated:		
Act of August 5, 1892		100, 000. 00
Act of March 3, 1893		900, 000. 00
Repayments, care foreign seamen, etc		38. 41
Total available during fiscal year		1, 110, 299. 61
Expenditures:		
Camp Low, N. J	$54, 775. 73	
Cape Charles, Va	10, 881. 74	
Delaware Breakwater, Del	7, 181. 15	
Fort Pulaski, Ga	1, 765. 20	
Foreign medical service	14, 798. 05	

Preventing the spread of epidemic diseases—Continued.

Expenditures—Continued.		
Medical service in United States, sanitary inspectors, etc	$41, 215. 13	
Repairs to steamers	4, 434. 27	
Expended at quarantine stations under allotment by the President	9, 946. 96	
Quarantine stations, 1892	804. 32	
Bath house, disinfecting machinery, etc., Camp Low	16, 000. 00	
Wharf, disinfecting house, etc., Reedy Island	12, 000. 00	
Bath house, boiler house, etc., Delaware Breakwater	5, 000. 00	
Laundry appliances, kitchen, etc., Cape Charles	3, 750. 00	
Stationery and transportation charges	103. 18	
Traveling expenditures	1, 678. 43	
		$184, 334. 16
Balance, June 30, 1893		925, 965. 45

STATEMENT BY APPROPRIATIONS.

Quarantine service, 1893.

Amount appropriated:	
Act of August 5, 1892	$50, 000. 00
Act of March 3, 1893	50, 000. 00
Repayments, care foreign seamen, etc	372. 75
Total available during fiscal year	100, 372. 75
Expenditures	100, 371. 50
Unexpended balance	1. 25

In addition to the above, $9,946.96 has been expended at the several quarantine stations from the appropriation for preventing the spread of epidemic diseases, out of an allotment of $10,000 by the President for this purpose.

Appropriation for quarantine stations, act August 1, 1888.

Stations.	Balance July 1, 1892.	Expenditures during fiscal year.	Balance June 30, 1893.
Cape Charles	$66, 834. 40	$31, 158. 19	$35, 676. 21
Delaware Breakwater	24, 652. 16	21, 663. 62	2, 988. 54
Key West	45, 861. 44	25, 552. 33	20, 309. 11
Port Townsend	55, 417. 69	4, 271. 97	51, 145. 72
San Diego	26, 089. 98	26, 089. 98	
San Francisco	83. 94	118. 44	
Repayment	34. 50		

Appropriation for quarantine stations, act March 3, 1891.

South Atlantic, balance of appropriation July 1, 1892	$18, 991. 33
Appropriation, act of August 5, 1892	6, 000. 00
Total available	24, 991. 33
Expenditures to June 30, 1893	17, 949. 44
Balance June 30, 1893	7, 041. 89

Gulf Quarantine Station, buildings, etc., act March 3, 1891.

Balance, June 30, 1892	12, 612. 01
Appropriation, act of August 5, 1892	7, 500. 00
Total available	20, 112. 01
Expenditures to June 30, 1893	11, 593. 74
Balance June 30, 1893	8, 518. 27

San Francisco Quarantine, completing station, etc., act August 5, 1892.

Appropriation, act of August 5, 1892	$18,500.00
Expenditures to June 30, 1893	2,410.70
Balance June 30, 1893	16,089.30

Chesapeake Bay Quarantine Station, act March 3, 1893.

Appropriation, act of March 3, 1893	7,000.00
Balance June 30, 1893	7,000.00

San Francisco Quarantine, fumigating steamer.

Balance June 30, 1892	$5,996.75
Expenditures to June 30, 1893	4,980.43
Balance June 30, 1893	1,016.32

Key West Quarantine, disinfecting machinery.

Balance June 30, 1892	$7,160.74
Expenditures to June 30, 1893	6,260.34
Balance June 30, 1893	900.40

SANITARY REPORTS AND STATISTICS.

During the year the Abstract of Sanitary Reports, issued weekly, have conveyed to health officers, both at home and abroad, as well as to the general public, accurate information of the existence of cholera, yellow fever, and other contagious diseases, and giving in a condensed form a narrative of the progress of the yellow fever epidemic at Brunswick, Ga. In addition to the usual statistical matter it contained the reports of the medical officers in foreign countries upon all matters affecting the public health of the United States, and in particular those relating to immigration. A special officer has been detailed to edit and supervise the mailing of these abstracts, which are greatly appreciated, not only by quarantine officers, but steamship companies, merchants, and the press. The volume for the present year will number about 1,300 pages.

NATIONAL QUARANTINE STATIONS.

NATIONAL QUARANTINE STATIONS.

CAMP LOW, SANDY HOOK, N. J.

This station was established in September, 1892, for the purpose of relieving and assisting the New York Quarantine in the care of the large number of immigrants arriving on infected vessels, and was placed in complete readiness for service in the spring and summer of 1893. Its sanitary provisions were perfected by the addition of two steam chambers for the disinfection of baggage, a bath house, containing twenty-three apartments, for the bathing of immigrants, and a pump and tanks for perfected water supply. Arrangements were made with the Revenue-Cutter Service for immediately furnishing officers and enlisted men for guard duty, and during the epidemic of cholera in Naples everything was in readiness for the utilization of the camp, the necessity for which seemed to be threatening. The perfecting of the arrangements at this camp was earnestly urged upon the Bureau by the advisory committee of the Chamber of Commerce of New York.

DELAWARE BREAKWATER QUARANTINE.—NOVEMBER 30, 1892, TO NOVEMBER 30, 1893.

Vessels disinfected	20
Vessels inspected and passed	573
Vessels passed to the Lazaretto at Philadelphia	3
Vessels sent to Reedy Island quarantine station	4
Vessels spoken and passed	8

One case smallpox on British steamer *Elton* June 7, 1893. One case varioloid and three measles on American schooner *Ohio*, arrived May 21.

American schooner *Hannah McLoon* arrived July 25, 1893, from Havana, with body of captain on board; died from yellow fever; five other cases on voyage; all recovered.

During the year an artesian well has been sunk at this station and the water supply distributed to the barracks and other buildings. Steward's quarters have been erected; also a bath house containing 21 bath rooms with shower baths, provided with hot and cold water; a laundry building; steam-disinfecting chamber, and additional water tanks. The whole reservation with the exception of the surgeon's residence, has been inclosed by a strong picket fence 10 feet high, and permanent board walks have been laid.

REEDY ISLAND QUARANTINE.—JULY 16 TO NOVEMBER 30, 1893.

Vessels disinfected	17
Vessels detained for observation	7
Vessels inspected and passed	317
Vessels inspected and passed to Philadelphia Lazaretto	12
Vessels pumped out	1
Vessels spoken and passed	5

A full description of the Reedy Island quarantine station and the reason for its establishment are set forth in the following article prepared for the information of those interested by the Maritime Exchange of Philadelphia, the data being furnished by this Bureau.

UNITED STATES QUARANTINE SYSTEM ON THE DELAWARE BAY AND RIVER.

A.—DELAWARE BREAKWATER QUARANTINE STATION.

The Delaware Breakwater quarantine station, at the mouth of the Delaware Bay, was established by the National Government in 1884, and was opened on the 1st of August of that year. It was established upon the recommendation of the senior Senator of Delaware at that time, and by request of the authorities of Philadelphia, Pa., and Wilmington and Lewes, Del., and until the passage of the act of February 15, 1893, was operated in aid of the local quarantines on the Delaware Bay and River.

The reservation has a water front of 1,500 feet and a depth of 1,200 feet, and is situated one-half a mile distant from the tip of Cape Henlopen, between the cape and the town of Lewes. Of this reservation the greater portion—900 feet on the sea front running back 1,090 feet—is surrounded by a board fence 6 feet in height, inclosing all the quarantine buildings except the surgeon's quarters and boathouse. About 900 feet from the western boundary of the reservation is an iron pier 1,701 feet in length, with a width at the shore end of 21 feet, while the outer 546 feet have a width of 42 feet. This was erected by the Engineer Department of the Army at a total cost of about $368,500. Provisional transfer of the pier was made to the Marine-Hospital Service by Congress in 1890. The depth of water at the end of this pier is 25 feet.

The surgeon's quarters, as stated above, are without the quarantine inclosure, and are two stories in height and are built of brick. They contain the administration offices also. The whole building is well furnished and comfortably fitted up throughout, and contains fifteen rooms.

The boathouse, 48 by 18 feet, is a short distance from the surgeon's quarters nearer the shore line.

Within the inclosure are the two hospitals, steward's quarters, barracks for detained immigrants, dining rooms and kitchen for same, bath house, disinfecting chamber, laundry, boiler house, and artesian well. .

The hospitals, two in number and some 600 feet apart, are both situated on the sea front, and the larger one, 60 by 30 feet, two stories in height, includes an addition just completed, increasing the quarters for the hospital steward on duty at the quarantine. This hospital has a capacity of about 20 beds, while the smaller one, 50 by 30, can afford accommodations for about 12 patients.

The immigrant bath house is 86 by 16 feet, with an addition 24 by 16 feet on each end. The bath house contains 20 shower baths and 1 bath tub, with hot and cold water connections to each bath. The additions contain disrobing and dressing rooms. The boiler house and laundry, 20 feet distant from the bath house, is 61 feet 6 inches in length by 21 feet in breadth and is divided into two rooms. The one next the bath house contains the steam disinfecting chamber, constructed by the Kensington Engine Works after designs furnished by P. A. Surg. J. J. Kinyoun, M. H. S. The steam chamber is intended only for the disinfection of wearing apparel of immigrants detained for observation and sickness. It is 4 feet 4 inches by 5 feet 4 inches by 9 feet 6 inches in dimensions and has two cars, which support wire screens upon which the articles to be disinfected are spread before being run into the chamber. The cars run on an iron track, a section of which, sufficient in length to support the car, is itself moveable, and can be brought either to join the track entering the chamber, or to the one running alongside. The boiler house also contains a boiler for generating steam to be used for disinfecting and for running a small engine and pump. The other half of the building, the laundry contains twenty-four stationary washtubs and drying apparatus for the use of the detained immigrants. These two buildings were erected in 1893.

The barracks, which are the next buildings to those just described, consist of two structures, each 300 by 24 feet, and of a clear height of 12 feet. One runs nearly north and south and the other nearly east and west. They are each divided by five partitions into seven compartments of equal size, and contain accommodations for from 800 to 1,000 immigrants. The bunks are built in tiers, three in number, and are similar in arrangement to those in the steerage of a vessel carrying immigrants. Each barrack has an addition 15 by 44 feet in dimensions, containing rooms for nurses and storerooms for sheets, pillows, etc. The barracks are not connected, but in the interval between them is the building containing the dining room for immigrants, kitchen and storerooms. This building is 48 feet square with an addition 18 by 45 feet. The kitchen contains apparatus for cooking by steam and all the most modern appliances for the speedy preparation of food for large numbers of people.

In the rear of the barracks are found the latrines 30 by 10 feet, with a height of 9 feet. Water is supplied to all these buildings by an artesian well situated within the inclosure and driven to a depth of 394 feet. With the use of a pump the daily output of this well—per day of twenty-four hours—is from 18,000 to 21,000 gallons, a quantity sufficient for all purposes required. The water is carried by overhead piping to the buildings and to two large tanks situated near the bath house and which can be seen in the photograph of same.

All the buildings within the inclosure are constructed of wood, and are connected with one another and with the surgeon's quarters by board walks.

As will be observed by the above description of Delaware Breakwater Quarantine, it is fitted up as a place of detention for suspects or for those actually suffering from some quarantinable disease, but as yet nothing has been said about the treatment of the vessel that may have brought such suspects or ill immigrants. Before the summer of 1893 the only vessels required to stop for inspection at Delaware Breakwater were those coming from an infected port or having at time of arrival a disease of a quarantinable character on board. All other vessels were treated at the Philadelphia local quarantine. Disinfection of vessels at the breakwater was practiced by introducing the disinfectant—sulphur usually—from a disinfecting tug laid alongside. But the threatened invasion of cholera during the summer of 1892 made it necessary for all vessels from foreign ports to be rigidly inspected at the breakwater, and it was found that the carrying out of this order entailed great hardships on all concerned. The anchorage at the breakwater quarantine is almost in the open sea, and in rough weather it is sometimes impossible to board a vessel for the purpose of inspection, and, of course, the inspection and disinfection, if necessary, were frequently delayed for some time—perhaps for some days. Furthermore, a vessel arriving at Delaware Breakwater Quarantine at sundown was necessarily detained there until next morning to permit a daylight inspection, and this delay entailed considerable expense and inconvenience, as it was almost impossible for the vessel in that case to discharge her passengers in Philadelphia the same day. It became evident for these reasons that an additional station for inspection and disinfection of vessels was necessary, and it was moreover evident that such station should be nearer Philadelphia. Such action was urged by the Philadelphia Maritime Exchange, and also by a joint committee representing the States of Pennsylvania and Delaware, who further considered the location of the Philadelphia local quarantine so near Philadelphia as a menace to that city. The director of public safety of Philadelphia and a committee of the Pennsylvania legislature and others interested called upon Surgeon-General Wyman to learn what plans he had conceived to meet the exigency of the situation; and the plans since carried into successful execution were laid before them. In the meantime the attention of the Surgeon-General had been directed to Reedy Island as the most suitable place by an officer of the service after consultation with an engineer officer of the Army in charge of improvements in the Delaware River. Situated nearly at the junction of the Delaware Bay and River, the Government already owned the 50 acres at the northern extremity of the island, and this was turned over to the Treasury Department for quarantine purposes. The establishment of this station was urged most strongly also by the legislature of the State of Pennsylvania, a copy of whose resolutions, forwarded by the governor, is as follows:

JOINT RESOLUTION OF PENNSYLVANIA LEGISLATURE.

In the Senate, February 28, 1893.

Whereas the President of the United States will shortly have the disposition of nearly half a million dollars for quarantine purposes;

And whereas the legislature of Pennsylvania is informed that Walter Wyman, Surgeon-General of the Marine-Hospital Service, has strongly recommended to the Secretary of War the extension and improvement of the quarantine service at the port of Philadelphia by establishing a boarding and disinfecting station on Reedy Island, in the Delaware River, which shall be subsidiary to the United States Marine-Hospital Service at Lewes, Delaware;

And whereas the speedy perfection of the Federal quarantine service at the port of Philadelphia is of vital importance not only to the States bordering on the Delaware Bay and River, but to every State in the Union, inasmuch as a large majority of the immigrants landing at the port are transferred direct to other sections of the country, and the danger from the admission of contagious and infectious diseases is great: Therefore, be it

Resolved (if the house concur), That we, while standing ready to assist and cooperate with the Federal authorities in preventing the entrance of the threatened cholera scourge, and being determined to leave nothing undone to establish a thorough and vigilant quarantine guard at the port of Philadelphia, respectfully request the President of the United States to see to it that prompt and sufficient measures are taken to put into effect the plans of the United States Marine-Hospital Service for the improvement of the quarantine system in the Delaware Bay and River; and be it further

Resolved, That the governor of this Commonwealth be respectfully requested to communicate these resolutions to the President of the United States.

E. W. SMILEY,
Chief Clerk of the Senate.

Concurred in March 1, 1893.

CHARLES E. VOORHEES,
Chief Clerk of the House of Representatives.

Approved this 6th day of March, A. D. 1893.

ROBT. E. PATTISON.

OFFICE OF THE SECRETARY OF THE COMMONWEALTH,
Harrisburg, March 10, A. D. 1893.

PENNSYLVANIA, *ss.*

I do hereby certify that the foregoing and annexed is a full, true, and correct copy of the original resolution of the general assembly of the Commonwealth of Pennsylvania approved March 6, 1893, as the same remains on file in this office.

In testimony whereof, I have hereunto set my hand and caused the seal of the secretary's office to be affixed the day and year above written.

A. L. TILDEN,
Deputy Secretary of the Commonwealth.

[Seal of secretary's office, Pennsylvania.]

The site is favorable, being just above Bakers Shoal, so that after inspection or disinfection it is not necessary for vessels to wait for the tide to cover this bar.

An allotment was secured from the epidemic fund for the purpose of constructing and equipping this station in March, 1893, and the work was begun at once, station opened on July 1, 1893, and at the present date is almost completed, the surgeon's quarters, men's quarters, cottage hospital, and boathouse having been constructed under contract during the winter, and are now being erected on Reedy Island.

B.—REEDY ISLAND STATION.

The main structure of the Reedy Island quarantine station is the pier head and disinfecting shed. This pier, situated directly in the channel, is 200 feet long by 40 feet broad, and has a depth of water off its eastern or channel side of 25 feet. It is built of heavy piling driven down to hard bottom and firmly bolted together, and having at each end a double row of piling 50 feet long and a triangular icebreak, constructed of heavy piling and timbers, extending out from this double row of piling 50 feet. The depth of water off the pier allows of the mooring of a vessel directly to the pier during the process of disinfection. On this pier head is the shed for the disinfecting machinery, warehouses, and observatory tower, as well as the quarters occupied at present by the attendants, pending the erection of their new ones. The total length of the building is 196 feet, the 90 feet at the southern end being 36 feet broad, and the northern 106 feet being 23 feet broad. This latter portion is divided into warehouses, and contains one large wooden tank of a capacity of 15,000 gallons. The southern portion, 90 by 36 feet, is divided into two parts, one 16 by 36 feet and one 74 by 36 feet, which contains the following disinfecting machinery: Two steam chambers of the same make and pattern as the one at Delaware Breakwater described below, but larger, viz, each 15 feet long, 5 feet 4 inches high, 4 feet 4 inches in width—placed side by side with trucks and railway, the eastern track, the one nearest the front of the shed, being extended out of the building and running all the length of the northern portion of the pier (the building being here narrowed as mentioned above) so as to permit the loading of the truck directly from the vessel. The shed also contains a sulphur furnace of the Valk & Murdoch, Charleston, type, catch cylinder, exhaust fan, and engine (3-horse power), to run the same, and rubber piping to conduct the fumes of SO_2 from the furnace to the vessel. A 50-horse power boiler supplies steam for the disinfecting chambers, and in addition there is an air pump, a fire and tank pump, and another pump for the purpose of filling the bichloride tank (capacity, 3,000 gallons), which is placed on the roof. (Photographs X-XI.) In this shed is also a tank with a capacity of 3,000 gallons.

During the past winter connection has been made between the station and the Western Union Telegraph Company lines, and to effect this a cable was laid from Port Penn across Reedy Island to the pier head. The cable is 4,800 feet in length, and was laid at a cost of $1,325. An observatory has been erected on the roof of the southern end of the pier, in size 15 feet 9 inches by 17 feet 3 inches, and fitted with telegraph instruments, so that direct telegraphic communication can now be maintained with the station.

The new buildings, located on Reedy Island, comprise a cottage hospital 58 by 29 feet with a wing 19 by 14 feet, attendants' quarters 67 feet 6 inches by 24 feet with a veranda 67 feet 6 inches by 7 feet, and surgeons' quarters 41 feet 2 inches by 41 feet 2 inches with a veranda 8 feet wide all around it. These buildings are erected on piling on the island, so as to be above high water in winter and spring, and are connected by gangways. From these buildings a gangway extends 300 feet to the water, where a boathouse 49 by 28 feet is erected on piling.

The steamer *Louis Pasteur* is used as a boarding boat at the station. She is 87 feet in length, 16 feet beam, and draws 6 feet of water. Vessels are inspected at the station between sunrise and sunset, and the distance from Philadelphia is such that a steamer inspected at Reedy Island in the morning reaches Philadelphia in time to enter and discharge passengers the same day, thus saving both time and money.

Infected vessels are, of course, as heretofore, inspected at the Breakwater, and those exposed to infection taken off and held for observation at the quarantine station there, while the vessel is sent to Reedy Island for disinfection. If a vessel with quarantinable disease fails to stop at the Breakwater, as ordered to do, on inspection at Reedy Island she will be remanded to the Breakwater, if necessary, so that the contagious case and suspected immigrants may be taken off, when she then returns to Reedy Island for disinfection. To quote from the Report of the Secretary of the Treasury for 1893:

"With this plant at Reedy Island and the accommodation for immigrants near the Delaware Breakwater, an efficient quarantine guard has been established for the city of Philadelphia and the other cities on the Delaware River and Bay."

Taking the station at the breakwater and the station at Reedy Island together, there is no quarantine plant in existence superior to this. It is to be hoped that no cholera-laden vessel will arrive at the mouth of Delaware Bay, but should such a vessel appear, carrying immigrants, for example, the care and treatment of both the vessel and the immigrants would be a matter of easy and scientific administration. Those actually sick would be immediately removed to hospital, the remaining immigrants would be immediately marched through the single gate of the inclosure to the bathhouse, where they would be obliged to disrobe and be given a thorough bathing, their clothing in the meantime being passed into the steam disinfecting chamber, near by. Having completed their bath they would be given fresh clothing from the large supply of new material constantly on hand, and they would then be passed into the barracks and kept under close observation. being divided into groups for this purpose. Should cholera appear in any one group, the patient would be removed immediately to hospital, and the five days' detention of that group would begin from the date of the removal of the patient. The danger of the spread of the disease among the detained immigrants would be reduced to a minimum by reason of this grouping. The water supply is from an artesian well, which can not by any possibility become infected.

During the season of 1893, when there was an expectation of the arrival of such a vessel at the breakwater, an arrangement was made by the Surgeon-General with the chief of the Revenue-Marine Service, by which between forty and fifty enlisted men of the Revenue-Cutter Service would be sent from the several vessels of that service stationed in Boston, New York, Baltimore, and Philadelphia, for immediate duty as guards under the immediate command of lieutenants of the Revenue-Marine Service. A regular medical officer of the Marine-Hospital Service is in command of the station, assisted by experienced quarantine officers.

The patients and the "suspects" being thus provided for, the vessel itself would be immediately sent to Reedy Island, where, with the perfect facilities provided, the vessel would be quickly disinfected by fumes of sulphur thrown into its hold, the several apartments washed down with a solution of bichloride of mercury, and the dunnage of the crew and all textile fabrics disinfected by steam in the steam chambers.

No better place could be found for the detention of a large number of suspected immigrants than at the Delaware Breakwater. The high fence and the guard of the Revenue Marine would effectually hold the immigrants within the inclosure, and the very fact of the remoteness of the location adds to its desirability; for it goes without saying that people affected with cholera, or suspected of being infected, can not be too far removed from populous centers. Practically, however, the arrival of a cholera-laden ship would be a very exceptional circumstance, and the ordinary work of quarantine, namely, the inspection of vessels, to find out whether they are free from disease or not, is carried on with great facility at Reedy Island. The pier, which is the boarding station, is in the direct track of vessels bound for Philadelphia, and the inspection, so far as time is concerned, is reduced to a minimum.

A still further guard in this scheme of national quarantine on the Delaware River is the presence in Philadelphia of an experienced medical officer, who is ready at any time to act as the quarantine agent of the Marine-Hospital Bureau in the city. The Surgeon-General is thoroughly impressed, not only with the necessity of keeping out epidemic diseases, but also with the necessity of doing so with the least possible hampering of commerce. His policy has been constantly to so administer the regulations as to avoid all unnecessary delays or embarrassment of vessels.

COST OF PLANTS.

Delaware Breakwater Quarantine:	
Executive buildings	$16,237.00
Barracks	11,971.00
Fence	1,940.00
Bath house	2,500.00
Boiler house and laundry	2,500.00
Boilers (steam), etc	2,100.00
Water towers and tanks	245.00
Steam chambers	2,115.00
Installation of same	1,423.00
Drainpipe	187.00
Artesian well	2,403.00
Pump and water distribution	2,185.00
Addition to surgeon's quarters	1,427.00
	47,233.00
Reedy Island Quarantine:	
Pier with warehouse, observation tower, disinfecting machinery, etc.	$46,422.00
Cable	1,325.00
Surgeon's quarters, cottage hospital, attendants' quarters, boathouse, gangway, sewerage, etc	19,125.00
	66,872.00
	47,233.00
	114,105.00

CAPE CHARLES QUARANTINE, NOVEMBER 30, 1892, TO NOVEMBER 30, 1893.

Vessels disinfected	10
Vessels detained for observation	1
Vessels inspected and passed	354
Vessels spoken and passed	141

British brig *Darpa* arrived July 13, 1893.—Captain died from yellow fever July 11; body still on board upon arrival; two other cases on board upon arrival. One new case developed July 14, 1893.

During the year there have been erected at Fishermans Island a wharf, with warehouse and a gangway to the shore; barracks accommodating 1,600 immigrants; a kitchen, dining-room, and laundry. An artesian well has also been sunk.

The ship *Jamestown*, anchored near Old Point Comfort, has been provided with a steam disinfecting chamber, and a deck house, with accommodations for caring for 300 or more immigrants, and is in itself a supplemental quarantine station, which can be used either for the care of cabin passengers, or a limited number of immigrants held under observation.

SOUTH ATLANTIC QUARANTINE, BLACKBEARD ISLAND, GA., NOVEMBER 30, 1892, TO NOVEMBER 30, 1893.

Vessels disinfected	42
Vessels inspected and passed	21

American barkentine *Anita Berwind* arrived June 28. Sent from Brunswick. Captain on barkentine *Berwind* died June 28 of yellow fever at Satilla River.

The additional wharf referred to in the last Annual Report has been completed, and a steam chamber, sulphur furnace, and naphtha launch have been provided. An artesian well has also been driven, located on the wharf.

BRUNSWICK, GA.

This station was taken possession of by the Government July 20, 1893, but almost immediately thereafter the epidemic of yellow fever appeared in Brunswick.

KEY WEST QUARANTINE, DRY TORTUGAS, FLA., NOVEMBER 30, 1892, TO NOVEMBER 30, 1893.

Number of vessels disinfected	24

British barkentine *Antilla* arrived from Havana, August 8, with one case of yellow fever on board; died same day.

British barkentine *Dexter* arrived October 4, from Cienfuegos with one case of yellow fever on board; died October 6.

A steam chamber, naphtha launch and whaleboat have been provided for this station during the year.

GULF QUARANTINE, NOVEMBER 30, 1892, TO NOVEMBER 30, 1893.

Vessels disinfected	66
Vessels inspected and passed	21

American schooner *Richard S. Spofford* arrived June 9, 1893, from Havana, with one case yellow fever; died June 12. American schooner *Jno. C. Smith* arrived July 7, from Havana; one case yellow fever developed three days after arrival. Spanish steamship *Leonora* arrived August 3, from Sagua la Grande, having left two cases yellow fever at Pensacola, Fla. American ship *Fawn* arrived August 14, from Havana; one case yellow fever developed August 18, 1893. Norwegian bark *Eglantine* arrived September 5, from Havana; one case yellow fever developed September 8.

A steam chamber was placed in position upon one of the new pier heads at this station during the year.

THE DESTRUCTION OF THE GULF QUARANTINE STATION ON CHANDELEUR ISLAND BY STORM, OCTOBER 1, 1893—TEMPORARY TRANSFER TO SHIP ISLAND.

The following reports have been received from the medical officer in command of the station:

GULF QUARANTINE, *October 4, 1893.*

SIR: Referring to my telegram of the 2d instant reporting the destruction of this station, I have the honor to report the following details:

The hurricane commenced about 8 p. m. on Sunday, October 1, 1893, the wind blowing from the southeast, the water rapidly rising, and a heavy sea sweeping over the island. The only communication between the surgeon's quarters and dispensary and hospital building was soon carried away. This was a light structure recently erected by the attendants. After this the inmates of each building were left to their own unaided resources. The laundress was fortunately saved by being brought up to my quarters shortly before those she occupied were swept away. The hurricane reached its height about 6 a. m. Monday morning, at which time the hospital ward was completely destroyed and carried out to sea. Its inmates at the time are supposed to have been the following five persons, who are missing: Steward L. A. Duckert, Nurse John MacKenzie, Boatman Johan Muller; and two patients, George Salmon, from the American bark *R. Goddard*, and Herman Gallen, from the British steamship *Ravensdale*, the former suffering from an incised wound of chest, the latter from some pulmonary trouble.

It is to be hoped that some of the missing may yet be heard from; but I am of the opinion that the chances are very poor, as at the time of the collapse of the ward the wind had hauled to the southwest, sweeping everything out to sea. Every possible effort has been made to find some trace of them, but without success.

The effect of the storm upon Government property may be briefly stated, as follows: All outbuildings, surgeon's laundry, carré cabin (occupied by female attendant), disinfectant storeroom, condemned-property room, bridges, landings, hospital ward, and pierhead, completely destroyed, not a vestige remaining except a piece of piling here and there; flagstaff blown away.

The remaining buildings are more or less total wrecks, the surgeon's quarters being the worst off, and liable to fall at any moment. The contents of the buildings are either injured or destroyed. Some of the records, I fear, are lost. Of the floating property nothing remains but the steamer *Welch*, the naphtha launch, and the whaleboat. Of these the only serviceable one is the latter. The *Welch* is high and dry on the north point, and I doubt if the naphtha-launch engine can be repaired. Of this, however, I have some hopes.

The effect of the hurricane on the topography of Chandeleur Island has been remarkable. It is completely changed. With very few exceptions every sand hill has been swept away, and nothing remains above water except the marsh grass. Deep cuts have been made through the island at numerous points, two of them directly adjoining the station, to the north and to the eastward. This is a most important factor with respect to the station, inasmuch as it leaves it entirely without protection, and it is now, in fact, equivalent to being in an open sea. It will have to be abandoned.

At the time of the hurricane there were eight vessels in quarantine limits. The following morning they were all missing except the steamship *Ravensdale* and the bark *Ragna*, the latter dismantled.

Very respectfully,
G. M. GUITÉRAS,
Sanitary Inspector Marine-Hospital Service.

SUPERVISING SURGEON-GENERAL MARINE-HOSPITAL SERVICE.

UNITED STATES MARINE-HOSPITAL SERVICE,
DISTRICT OF THE GULF,
Ship Island, November 30, 1893.

SIR: I have the honor to make the following general report of the transactions of this station during the quarantine season of 1893.

The season was practically opened on April 7, 1893, by the arrival of the infected vessel *Walter D. Wallett*, from Santos. Although the regular quarantine season was not supposed to commence until May 1, it was deemed advisable to detain this vessel for disinfection on account of her bad sanitary history, foul condition, and the warm weather already prevailing in this latitude.

From April 7 to November 1, 1893, 81 vessels were treated at this station. This number may be divided as follows, according to the sanitary condition of the vessel and the port of departure:

Infected (that is, having had yellow fever on board)	21
From infected ports, and, therefore, suspected of being infected	28
From suspected ports	18
From clean ports	14
Total	81

There were, therefore, 67 vessels disinfected, in acordance with the national quarantine regulations, and thus far no authentic case has been reported of any of these vessels having developed contagious disease or communicated it to others, after having received pratique from this station.

Those vessels hailing from clean ports, 14 in number, were simply inspected and passed, with the exception of two which were detained for not having a United States consular bill of health. The facts were reported to the Supervising Surgeon-General and the vessels released from quarantine by his orders, there being no reason to suspect any intentional infraction of the law.

Seven cases of yellow fever were treated in hospital during the past season, one of which terminated fatally.

Other diseases treated were as follows:

Disease.	Result.			Remarks.
	Number.	Recovered.	Died.	
Malarial fever, remittent	10	10	0	
Malarial fever, intermittent	1	1		
Tubercle of lung	1		1	Drowned in hurricane.
Acute pleurisy and mitral regurgitation	1	1		Mitral regurgitation only improved.
Lobular pneumonia and pleurisy	1	1		
Diarrhea	1	1		
Incised wound of thorax	1		1	Drowned in hurricane.
Total	16	14	2	

Many improvements were made at this station during the period covered by this report. A detailed description of these is given in my report of July 16, 1893. The more important may be again enumerated here, as follows: Repairs to fumigating steamer *Welch* and to the fumigating and ballast barges. Erection of a flagstaff, 75 feet high. Bridges constructed, communicating between the office building and medical officers' quarters and between the latter and the main island. A floating landing. An instrument cabinet. An iron beacon made and placed in position to mark the channel over the bar. All the above work, with the exception of that mentioned in the first item, was done by the station crew.

A set of awnings for all galleries exposed to the sun was supplied by A. Gerdes, of New Orleans, under advertisement, and put in position at the station. A complete disinfecting plant was erected on the pier head by the contractor, Mr. S. S. Leonard, at a cost of about $7,000.

With the above improvements, and especially the completion of the disinfecting plant, the Gulf quarantine station could be considered a model quarantine station. It was fitted to perform the work for which it was intended in a satisfactory manner, with a minimum of discomfort and delay to shipping, and at the same time efficiently guarding the adjacent coast against the introduction of contagious or infectious diseases from abroad.

It is, therefore, with feelings of deep regret that one who has taken an active interest in the development and perfection of this station during the past two years is now compelled to record its complete destruction. The hurricane which on October 1 swept over the Gulf Coast from west of the Mississippi River to Pensacola on the east destroyed within a few hours the product of the arduous labors of the past five years, completely wrecked the Gulf quarantine station, and almost obliterated the island upon which it stood.

The scene of desolation which presented itself to my view as the storm abated and the surroundings became visible beggars description. But the destruction seen on every hand was nothing to the sad discovery that five lives had been lost among the inmates of the station, and among them that of Hospital Steward Louis A. Duckert, a most efficient officer, intelligent, careful, and attentive to his duties. To him the station was indebted for many improvements which he originated and carried out with his accustomed zeal and enthusiasm.

About noon on October 2 the sea had gone down sufficiently to permit us to use, to some degree of safety, the only boat which had weathered the storm. In this we visited the buildings which still remained standing, and it was then that the sad discovery noted above was made. The rest of that day and the next were spent in futile efforts to ascertain the fate of the missing.

On October 3 Dr. Charles Pelaez, assistant physician, was transferred to Ship Island, with instructions to carry on at that point the work of the Gulf quarantine station, as far as his limited facilities would permit.

On October 8 I removed the whole crew to Ship Island, occupying the old and half-ruined buildings erected some fifteen years previously by the National Board of Health. Here the work of the disinfection of vessels was continued until the close of the quarantine season, November 1, but under many difficulties, for the reason that the fumigating steamer *Welch* could render no assistance, having been driven high and dry on the beach at Chandeleur during the hurricane of October 1. Strenuous and heroic efforts were made by the *Welch's* crew to get her off without assistance. But after working day and night for three weeks it became apparent that it would be impossible to float her with the means at command. A contract was then entered into with the tugs *Toiler* and *Julius-Elbert* to float the *Welch* for $3,000. After three days' work, during which the contractors were aided by the most favorable weather, the work was successfully accomplished without material injury to the vessel.

During the past quarantine season the relations between this National Quarantine Station and the local health authorities in this vicinity have not been entirely harmonious, they still persisting in the plan of ignoring the helping hand of the national quarantine, while, at the same time, accepting and, indeed, demanding its aid.

Very respectfully,
G. M. GUITÉRAS,
Passed Assistant Surgeon, Marine-Hospital Service.

SUPERVISING SURGEON-GENERAL U. S. MARINE HOSPITAL SERVICE,
Washington, D. C.

UNITED STATES MARINE-HOSPITAL SERVICE,
DISTRICT OF THE GULF,
Ship Island, Mississippi, November 27, 1893.

SIR: I am again compelled to report disaster to this section by the elements. A strong southeast gale blew all day yesterday culminating at midnight in a hurricane, which deluged everything, tearing tents covering the surplus goods saved from Chandeleur, exposing the contents to the wind and rain, blowing in and breaking window sashes and shutters, ruining furniture, bedding, clothing, stoves, tents, carpets, kitchen utensils, subsistence stores, and many medical supplies, as well as our personal effects. Two wharves recently erected were completely swept away. The small boats suffered somewhat. One skiff and several pairs of oars are missed and another skiff blown away, but subsequently found. It is evident that the two buildings here are not adapted for the purpose of even temporary dwellings or storage houses. I therefore again respectfully recommend that if it is not deemed advisable to repair them at once or build new ones, this station be closed and the property remaining be left in charge of two watchmen; and if the Bureau considers it essential to keep a general control or supervision over this quarantine station, I would recommend that the steamer *Welch* be kept in commission, to be used for boarding purposes, and that the medical officer in command of the station have his headquarters at Biloxi pending the establishment of the new Gulf quarantine station.

Very respectfully,
G. M. GUITÉRAS,
Passed Assistant Surgeon Marine-Hospital Service.

SUPERVISING SURGEON-GENERAL U. S. MARINE-HOSPITAL SERVICE,
Washington, D. C

SAN DIEGO QUARANTINE, NOVEMBER 30, 1892, TO NOVEMBER 30, 1893.

Vessels inspected and passed	118
Vessels spoken and passed	5

During the year officers' quarters, attendants' quarters, a laundry, and boathouse and naphtha launch have been provided for this station.

SAN FRANCISCO QUARANTINE.

Infected steamer *Belgic* arrived February 20, 1893. One case smallpox en route, left at Honolulu. Steerage held under observation at station. Released February 22.

Pacific mail steamer *China* arrived February 1, 1893. Disinfected baggage of 130 Chinese and Japanese.

Pacific mail steamer *City of New York* arrived April 4, 1893. One case smallpox received at station. Released cabin passengers April 18. Baggage and clothing disinfected.

Steamer *Oceanic* arrived October 4, 1893. Unlabeled baggage of steerage passengers disinfected.

Passed Assistant Surg. Carmichael reports as follows under date of March 6, 1893:

SIR: I have the honor to inform you that there has been disinfected at this station the following-named property of immigrants :

Personal effects and baggage of 60 Chinese and Japanese immigrants, arrived by Pacific mail steamer *City of Peking*, and numbering 182 pieces, by steam and dry heat, at National Quarantine Station, February 6, 1893.

Personal effects and baggage of 171 Chinese and Japanese immigrants arrived by Occidental and Oriental steamer *Belgic*, and held for observation at quarantine, numbering 361 pieces, by steam and dry heat, at National Quarantine Station, February 22, 1893.

Personal effects and baggage of 37 Chinese, Japanese, and European immigrants, arrived by Pacific mail steamer *Peru*, and numbering 135 pieces, by sulphur dioxide, on board the vessel, February 24, 1893.

Personal effects and baggage of 56 Chinese and Japanese immigrants, arrived by Occidental and Oriental steamer *Oceanic*, and numbering 137 pieces, by sulphur dioxide, on board the vessel, March 6, 1893.

During the year the barracks erected by the steamship companies have been purchased and put in thorough repair by the Government. The reservation has been surrounded by a fence. The U. S. S. *Omaha*, turned over to this Bureau by the Navy Department, has been decked over and repaired and otherwise made capable of accommodating detained passengers.

PORT TOWNSEND QUARANTINE STATION, DIAMOND POINT, NOVEMBER 30, 1892, TO NOVEMBER 30, 1893.

Vessels disinfected	1
Vessels held under observation	1
Vessels inspected and passed	102

A wharf, warehouse, hospital, laundry building, and surgeon's quarters have been erected during the year. Plans have been drawn for the disinfecting machinery. The U. S. S. *Iroquois*, turned over to this Bureau by the Navy Department, has been housed over, was towed by revenue cutter from San Francisco to Port Townsend and put in condition for the reception of quarantine cases pending the completion of the quarantine plant proper.

HISTORY OF THE CHOLERA EPIDEMIC OF 1893.

The cholera epidemic of 1893 in Europe is to be considered as a survival and continuation of the epidemic of the preceding year. Reports received up to the close of December, 1892, indicated that cholera was still present in Austria-Hungary, Belgium, France, Germany, the Netherlands, and Russian Poland.

The recent history of cholera epidemics shows the tendency of cholera to domicile itself where it has gained a foothold, and that if in foreign soil it finds a favorable medium for its development and propagation, it persists in the form of occasional cases and forms a focus of infection when the conditions for its germination and diffusion present themselves. These conditions are found in unsanitary local features and in contaminated water supply. It is at this point that the science of sanitation meets the problem of eliminating diseases by creating hygienic local conditions and preventing contamination of the water supply of towns and cities.

In European communities, where cholera exists as an importation, sanitation should be an effective safeguard against choleraic outbreaks. In the East, where the conditions for the germination of cholera are always present, the problem is more difficult of solution. Here it has to deal with natural causes which are climatic and therefore constant and invariable, and with great concourses of people which offer all that the disease requires to force it to a sudden outbreak. The annual pilgrimages to Hurdwar, in India, and to the Hedjaz, in Arabia, bring great numbers of people together under conditions which are in the highest degree unsanitary. These pilgrimages are made by sea and land caravan. When cholera is studied at its endemic source, in Lower Bengal, its origin in the human organism and its diffusion by human means are lost sight of, and natural agencies outside of man appear as its originators and disseminators. When, however, the disease is imported into countries where the climatic conditions are different, its direct transmission by infection is indubitable. At the season of greatest heat pilgrims from the endemic area of cholera disperse themselves over northern India, Persia, and Arabia. The transportation of bodies of pilgrims and others by caravan is a menace to the health of the regions lying along the caravan route. During the month of Moharrem as many as 60,000 people arrive at Kirmanschah, in Persia, bringing bodies for interment in the holy places of Kerbela. These conditions are matters of tradition and religious custom in the East, and political and national considerations increase the difficulty of dealing with them.

If a cholera epidemic is kindled in Arabia or Persia it is quickly carried, by way of the Black Sea ports, to European centers. It is therefore essential to the protection of Europe against choleraic invasion to prevent the formation of cholera foci on European frontiers. The means to this end are maritime quarantine in the Red Sea and Persian Gulf, and sanitary supervision of travel by sea and land caravans. International intervention in the formulation and carrying out of such a system seems indispensable. The United States are directly interested in the success of the measures proposed, as immigration from Europe is liable to place us in close relation with infected ports.

A review of the cholera epidemic of 1893 shows the prevalence of cholera throughout the world during the several months of the year, as follows:

In January cholera was present in Germany at Nietleben, Altona, and Hamburg, in Russia, in France, and at the lazaretto on the Island of Cameran in the Red Sea.

The outbreak at Nietleben occurred at the lunatic asylum, with a total of 114 cases and 45 deaths. It was attributed to the use of contaminated drinking water. The town of Nietleben is supplied with water from the river Saale, which receives the sewage of several large towns, notably Leipzig, above the point at which the water of the Saale is directed into the Nietleben reservoir. With regard to cholera at Altona and Hamburg it should be noted that the epidemic of 1892 severely affected Hamburg, while it almost entirely spared Altona and Wandsbeck, which form with Hamburg practically one city. Wandsbeck derives its water supply from a lake which is only slightly liable to contamination, while Altona and Hamburg are supplied with water from the Elbe. The supply for Hamburg is taken at a point where the river is comparatively untainted; that for Altona is drawn lower down where the river is much more foul, owing to its having received the sewage of Hamburg. At Hamburg the water was delivered unfiltered, at Altona filtered. Of the 500 cases of cholera at Altona 400 were shown to have been imported from Hamburg. One group of houses in Hamburg which was served from the Altona water supply was completely exempt.

In France cholera deaths were reported from the department of Morbihan. It will be remembered that the epidemic of 1892 in France had a distinctly different source from that which entered Europe from the East. It originated at Nanterre, in the vicinity of Paris, and was undoubtedly a recrudescence of the epidemic of the preceding year. From Nanterre it spread to Paris and thence to the northwestern seaport towns, where it lingered during the winter of 1892 and 1893.

The outbreak at the lazaretto on the Island of Cameran occurred in a detachment of troops from Yemen who were landed from the transport ship *Adana*. Total number of deaths, 39.

In February there was a sharp outbreak of cholera at Marseilles, France, but the disease did not become epidemic. In Russia cholera was reported present in fourteen provinces during January and February, with a total of 973 cases and 369 deaths.

In March cholera was present at Moscow, Russia, at L'Orient, and at Marseilles, France. The outbreak at Moscow occurred in the convict prison. At L'Orient cholera recurred after a cessation of a month and a half, with a total of 70 deaths. In Marseilles the disease did not assume an epidemic form.

In April cholera appeared in Austria, on the Russian-Polish frontier, and spread thence over a large part of southeastern Hungary. In France the epidemic diffused itself through localities in the vicinity of L'Orient.

In May cholera was epidemic at Marseilles, in L'Orient and its vicinity, and in Russia. A choleraic death was reported May 27, at Neustadt, in the vicinity of Hamburg.

In L'Orient and vicinity, up to May 9, 478, cholera cases and 178 deaths were reported. In Russia, up to May 19, cholera was reported present in twenty out of the sixty provincial governments of European Russia, and in three provinces in the Caucasus, with a total of 2,388 cases and 733 deaths. In Podolia alone there were 1,690 cases and 463 deaths.

In June cholera was diffused throughout Russia. In France it developed in the southern provinces and invaded Cette, Nimes, Toulon, Montpellier, Alais, and the Basses-Alpes, with a total of 343 deaths during the first half of the month.

In July cholera was officially declared epidemic in several provinces of Russia. At Moscow, up to July 21, 151 cases and 39 deaths had been reported. On July 28 the first case occurred at Antwerp, Belgium, in the person of a river boatman. In France official reports showed a wide distribution of cholera with an inconsiderable number of cases and deaths. From Mecca, Minah, and Djeddah in Arabia, 8,742 deaths from cholera were reported from the opening of the pilgrim season to July 31. The total number of pilgrims arrived in the Hedjaz up to that date was estimated at 93,000. At Smyrna a cholera focus formed, with a total of 238 cases and 166 deaths. The disease was said to have been imported into Smyrna on a French vessel.

In August cholera was found to be present in Russia in 48 provinces, with a total, from the date of outbreak, of 10,640 cases and 3,780 deaths. The course of the epidemic had been steadily westward.

On August 18, 3 cases were observed in Berlin.

In France the total number of cases officially reported up to August 15 was 1,530. Of this number 500 were reported from Brest and 601 from Marseilles. The absolute statistics of the epidemic in France can not now be stated.

In Italy an outbreak of cholera occurred in the provinces of Cuneo and Alessandria (Piedmont), about 50 cases and 30 deaths being observed in a dozen separate but small communities. At Naples an outbreak of cholera occurred, with a total of 434 cases and 360 deaths; at Rome, 14 cases and 7 deaths were reported; at Sulmona, 229 cases and 53 deaths.

On August 22 the presence of cholera in epidemic form was officially recognized in Austria-Hungary. The total number of cases and deaths as officially reported was as follows: Galicia, 1,284 cases, 742 deaths; Hungary, 798 cases, 1,015 deaths; Roumania, 700 cases.

In Holland the first case officially recognized as cholera occurred at Haringsvlidhoven, in the vicinity of The Hague, August 21.

Cholera cases and deaths continued to be reported from many localities along the canals. These inland waterways intersect the country in all directions and connect the small interior towns and villages with the seaports, thus greatly increasing the facilities for the diffusion of the epidemic. The total number of cases and deaths reported was not large, but the persistence of the disease in Holland is another evidence of its tendency to become domiciled.

In 1892 cholera was introduced into Holland direct from Hamburg. In 1893 it appeared under circumstances which showed it to be a recrudescence of the epidemic of the preceding year.

In Senegambia, Africa, at the French colonial settlement of St. Louis, cholera was reported present, with a daily average of 60 deaths. It was also present in Algiers, Senegal, and Tunis, at the pilgrim quarantine station of El Tor on the Isthmus of Suez, with a mortality of 10 per cent, and at Mogodor, the quarantine station on the coast of Morocco, with 44 cases and 10 deaths.

On August 3, the immigrant ship *Karamania*, from Naples, arrived in New York harbor with cholera on board. While the vessel was detained at the New York quarantine 18 cases and 3 deaths occurred among the passengers.

During the last week in August 1 case and 1 death were observed at Jersey City.

In September the cholera epidemic in Russia had pushed as far north as Finland, where it was reported present in several localities. Comparative statistics of the epidemics of 1892 and 1893 in Russia show a greatly diminished degree of intensity within an enlarged area of prevalence.

Cholera outbreaks occurred in Germany; at Hamburg, with a total of 83 cases and 43 deaths, and at Stettin, with a total of 112 cases and 50 deaths. In Spain cholera broke out in the province of Viscaya, on the French frontier.

At Antwerp, from the date of the outbreak, July 28, to September 15, 131 cases and 90 deaths were reported for city and district; from September 15 to 30, 47 cases.

At Leghorn cholera was reported present.

In England a choleraic outbreak occurred which in some respects merits particular attention.

The localities at which the epidemic was first declared were Grimsby and Hull, two neighboring seaport towns on the Humber. In the absence of careful medical inspection of incoming vessels at these ports the origin of the epidemic can not be traced, but it seems probable that Antwerp, which stands in close commercial relations with both places, was the starting point. Some authorities have found the source of the disease in local causes and have shown the sanitary conditions of Grimsby to have been exceedingly unfavorable. The drains of the town are tide locked twice a day, and the sewage of Grimsby and the neighboring town of Cleesthorpe swings back and forth with the tide over an area of sand beach a mile or more in extent. On this beach, when left exposed at low tide, shellfish were gathered by the people. In point of symptoms, rapid fatality, *post mortem* appearances, and bacteriological tests, the cholera of 1893 in England was indistinguishable from the cholera which prevails in the valley of the Ganges in India. It has been suggested on medical authority that the epidemic in England was a recrudescence from germs imported during the preceding year.* The disease was probably present in epidemic form during the greater part of the month of August, but the facts were concealed by the authorities. At Hull the authorities promptly gave notice of the presence of cholera and the epidemic was arrested. From the two centers of Grimsby and Hull the epidemic spread to other localities. A case of cholera was reported as far north as Stromness, in the islands of the Hebrides, in the person of a sailor from Grimsby.

Official reports covering the period from the date of the first case officially declared to September 30 give 157 cases of cholera or choleriform affections, 17 deaths, at Hull; at Grimsby, 120 cases, 32 deaths; London, 4 cases; Cleesthorpe, 14 cases, 6 deaths, and at 34 other localities, 44 deaths. A noticeable fact in regard to the cholera epidemic of 1893 in England, as in other countries, is the outbreak of a number of small epidemics outlining a wide area of prevalence.

In France cholera cases and deaths continued to be reported in decreasing numbers at places previously reported infected.

At Constantinople an outbreak of cholera occurred with a total, as officially reported by the Ottoman authorities, of 349 cases, 208 deaths. At Scutari, in the vicinity of Constantinople, 112 cases and 75 deaths were reported. A number of cases, total not given, were observed at Anatolia. These were traced to passengers by the steamship *Adana*, which plied during the summer between infected ports.

On October 6 cholera again broke out at Grimsby, England, after a cessation of thirteen days, with 5 cases and 2 deaths.

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*British Medical Journal, September 9, 1893.

At Leghorn the epidemic reached the maximum of intensity October 14 and 15, with 73 cases and 37 deaths.

At Antwerp, from October 1 to 16, 27 cases and 12 deaths were reported.

The epidemic was probably much more widely diffused throughout Belgium than the official reports show. Cholera was still present in October in the province of Viscaya, Spain, and in the localities in France previously reported infected.

At New York Quarantine 1 case and 1 death occurred among passengers by the steamship *Russia*. On November 9 cholera was reported extinct at Leghorn and Palermo. At the latter place, up to November 2, 968 cases and 507 deaths were reported. In Spain, from the date of the outbreak in September, to November 15, 1,117 cases and 473 deaths were reported.

It will be seen from the last statement that cholera in Europe had not become extinct by the middle of November, 1893.

List of places at which cholera was reported present in calendar year 1893:

Africa—Ain M'sila, Algeria: Alexandria, Egypt, at lazaretto: El Ghenob, Algeria; El Tor, Egypt: Goree Dakar, Senegal: Khroubs, Algeria; Mex, Egypt, quarantine station; Mogodor, Morocco, quarantine station: St. Louis, Senegambia.

Arabia—Djeddah, Mecca: Medina, Mecca.

Austria—Bosnia—Bryeka, Dolnja, Tuzla, Gracanica, Gradacec.

Bulgaria.—Kadikin, Ruschtschuk, Tutrakan.

Croatia—Belisec, Essegg, Jamina, Topalge, Vitogewic, Vrbanje.

Galicia—Belgec, Boharzany, Borszezow, Brzerko, Bukowina, Czartkow, Delatyn, Dobrotow, Dolnia, Dora, Jamna, Kasso, Kalomea, Kudrynce, Limanowa, Nesko, Nikuliczgn, Novosialka, Olvidiopol, Paneowa, Peczeniczgn, Rohatyn, Saybusch, Simiatyn, Tarnopol, Tortarow, Zalucze, Zbrucz, Zielen, Zygaczow.

Hungary—Altofen, Arad, Arva, Bacz, Bekes, Belgrade, Beregher, Bihar, Bodrogh, Borsod, Brasso, Buda Pesth, Cronstadt, Cyanod, Czongrod, Dées, Doborska, Erlau, Fogares, Jasz, Hajan, Hermanstadt, Heves, Kalascz, Kiskum, Klausenberg, Komorn, Krasso, Kukulto, Marmoroser, Nagy-Kun-Szolnok, Ngocza, Pest Pilio Salt, Raho, Semlin, Som, Stuhlweissenburg, Szabolcz, Szalnok, Szalthmar, Szeben, Szöreinj, Tolna, Tora, Arangos, Unter Altofen.

Roumania—Braila, Bucharest, Calaraschi, Cernawoda, Costanza, Dorohar, Galatz, Guirgewo, Fetesti, Jalowitz, Neamtza, Prabowa, Tekoutschi, Vlaska.

Belgium—Antwerp (city and province), Boam, Brussels, Charleroy, Damprémy, Luttich, Santvlitt, Willebrock.

Brazil—Rio de Janeiro, San Paulo.

France—Alais, Aubenas, Aubervilliers, Avignon, Basses Alpes (district), Bordeaux, Brest, Cadié, Carcassonne, Chantenay, Cette, Conquet, Cuers, Franqubergue, Frontignan, Guipavas, Hyéres, Islands of Molene and Trielen, Lambezellec, Larcat, La Seyne, La Vallette, Lemel, Limoges, Lorient (district), Marseilles, Mines, Mirepoix, Montarnaud, Montpellier, Nantes, Nimes, Nice, Olette, Palavas, Pamiers, Pas de Calais, Pierre Benite, Perpignan, Privas, Saint Pons, Salon, Sorgues, St. Nazaire, Toulon, Toulouse, Vannes (district).

Germany—Alt Drewitz, Altenwerder, Altona, Andernach, Ballinken, Barmen, Berlin, Bodenwerder, Coblentz, Cologne, Damnatz, Duisburg, Emmerich, Frauendorf, Gartz, Geestemunde, Hamburg, Homberg, Hohenwützen, Heerdt, Itzehac, Kirschborgum, Kiel, Kratzwick, Mayence, Meiderick, Neuweid, Neu Schaumberg, Niederfinow, Niederkränich, Palitz, Schwinemünde, Solingen (paper mills), Stettin; St. Goars, St. Goarshaven, Stowen, Sydosane.

Great Britain—Appleton le Street, Ashborne, Ashton, Balby, Bingley, Blyth, Bradford, Caton Mill, Denton, Derby, Gainsborough, Gloucester, Grimsby, Hartlepool, Hull, Ilkeston, Ingrow, Keihley, Leeds, Leicester, Liverpool, London, Low Moor, Maldon, Manchester, Mansfield, Middleton, Mitcham, New Castle on Tyne, North Bierley, Rawmarsh, Retford, Rotherham, South Shields, Stromness (Hebrides Islands), Tevidale, West Malling, Yarmouth.

India—Calcutta.

Italy—Anna Capri, Alessandria (province of), Aquila, Aversa, Avezzano, Bagni di Lucca, Barra, Bubbio, Busa, Caivano, Campalasso, Canerta, Capeccio, Capri, Cassino, Castellamare, Cueno (province of), Cussignocco, Feddio, Fiumicono, Florence, Foggia, Fresonare, Gaeta, Genoa (harbor), Lattissamento, Leghorn, Lucca, Maddaloni, Montegioco, Naples, Nocera, Aviglio, Palermo, Patti, Pavia, Pellerano, Perugia, Pescina, Piedmont, Pisa, Procida (Island of), Roccanerano, Rome, Salerno, San Giovani à Teduccio, San Guliano Vecchio, San Remo, San Rocco, San Salvatore, Scaferti, Sorrento, Sulmona, Torre Annunziata, Torre Garfali, Trapani, Triventi.

Japan—Hioga, Osaka.

Netherlands—Alphen, Ameide, Amsterdam, Avereest, Colworden, Delft, Deventer, Dubbledam, Durgerdam, Elden, Giesendam, Hague, Hansweert, Herzogenbusch, Heukelom, Huissen, Kedichen, Koog on the Zaan, Kralingen, Leerdam, Maasluis, Molenaarsgraaf, Nieuwettering, Oldebrock, Ostburg, Oudshoorn on the Rhine, Ouwerschie, Puttershock, Renkum, Rotterdam, Rozendale, Rumpt, Steefkerk, Ter Neusen, Utrecht, Werkendam, Wonbrugge, Ysselmonde, Zaandam, Zuilichem, Zwigndrecht.

Russia—Governments of Astrachan, Bessarabia, Charkoff, Cherson (district), Don province, Dorpat, Ekaterinislow, Elisawetpol, Grodno, Jelissawetpol, Kaluga, Kieff, Kharkoff, Khazan, Khorsach, Kostroma, Kovno, Kuban, Kursk, Kutais, Lomza, Lublin, Minsk, Moscow, Nicolaieff, Nijnii-Novgorod, Novocherkask, Orel, Orenberg, Orloff, Perm, Penza, Petersburg, Plock, Podolia, Podolsk, Poltava, Poti, Pskow, Prasngsz, Radom, Redout-Kale, Reval, Riazan, Sakatala, Samara, Saratow, Sebastopol, Schachtnaja, Simbvisk, Smolensk, Stovropol, Tambow, Taurida, Terek, Tersk, Tiflis, Tobolsk, Tomsk, Tschernigow, Tula, Tver, Viatka, Vilna, Vladimir, Volinsk, Volhymnia, Voronesch, Warsaw, Yarosloff. Cities: Alexandropol, Baku, Batoum, Bialystok, Bulsk, Brozlow, Cronstadt, Ekaterinislow, Helsingfoes, Kertsh, Kieff, Moscow, Nijnii-Novgorod, Poti, Rostoff, St. Petersburg, Sebastopol, Tiflis, Warsaw.

Servia—Belgrade.

Spain—Provinces: Alava, Biscay, Cordoba, Corunna, Guipuzcoa. Towns: Abando, Algorta, Arboleda, Arrigarriaga, Baracaldo, Begona, Berango, Bilboa, Campillo, Catalonia, Deusto, Echavarria, Erandio, Franco-Belga, Gallerta, Guenes, Las Arenas, Labarga, La Concha, Lejona, Matamoras, Mungnia, Orconera, Ortuella, Portugallete, Pucheta, Sestao, Turre, Zalle.

Turkey—Aboulhassih, Abovdjeruil, Abrufarsie, Avassum, Bagdad, Bassorah, Constantinople, Chatra-Amara, Djilila, Guermah, Hai, Hassan-Hayoun, Aamissieh, Kut, Menasin, Mohammerah, Mountefik, Nazrieh, Shouk el Sheouk, Smyrna, Tau, Zolen, Zubeir.

CHOLERA ON VESSELS. (*Calendar year 1893.*)

Cholera was reported on board vessels as follows:

Affondatore, naval vessel, in quarantine at Naples, number of cases not reported.

Bona, at Gravesend, England, from Bassorah, 1 case.

Carlo, immigrant ship from Naples to Brazil, 220 cases.

George Fisher, at Malta, from Roumania, 3 cases, 1 death.

Gergowa, at Marseilles, from Djeddah, 20 deaths during voyage.

Hjalmar, at Hadersleben, North Germany, from Kiel, 2 cases.

Karamania, at New York Quarantine, immigrant ship from Naples, 18 cases, 3 deaths.

Millfield, at Malta, from Roumania, 6 cases, 2 deaths.

Myrtle Branch, at New Castle on Tyne, from Nantes, 1 case.

Natal, French steamship, at quarantine station of Mex, Egypt, number of cases not reported.

Remo, immigrant ship from Naples to Brazil, 87 cases.

Russia, at New York Quarantine, from Hamburg, 1 case, 1 death.

GENERAL APPREHENSION WITH REGARD TO INTRODUCTION OF CHOLERA INTO THE UNITED STATES IN 1893, AND CONGRESSIONAL LEGISLATION RESULTING THEREFROM.

The widespread prevalence of cholera throughout Europe in 1892, and its presence at the New York Quarantine, and in New York City as well, together with the fact of its continued persistence abroad during the cold months, gave rise to much anxiety to sanitarians and the general public with regard to the coming summer of 1893. The daily newspapers were filled with opinions of health officers, sanitary experts, and physicians, unanimously agreeing upon the great danger which seemed to be impending. This apprehension was largely increased by reason of the World's Columbian Exposition, which was to be opened in May, 1893, which would necesssarily cause a large influx of visitors and importation of merchandise from portions of Europe that were likely to be infected.

Moreover, the success of this exposition seemed to be imperiled, for it was obvious that, should cholera gain a foothold in Chicago, or in any portion of the United States, it would seriously affect, if not actually ruin, financially, the enterprise in which large sums of money would be invested; and it was asserted in a warning manner that the financial failure of this enterprise, coming at a time of great business depression throughout the country, would create a general financial panic.

The chief source of danger appeared to be in the steadily maintained immigration to the United States. So serious was the situation that the Senate Committee on Immigration, being empowered by a resolution of the Senate to investigate the workings of the laws of the United States relative to immigration from foreign countries, etc., included within their inquiry the subject of suspension of immigration for one year, and called before them a number of prominent physicians and sanitarians for expressions of opinion as to the character and extent of the danger of the advent of cholera, particularly through immigration, and the measures necessary for its prevention. As a result of this apprehension and the widespread discussion of the matter in the public prints Congress passed a law, entitled "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service," which was approved by the President February 15, 1893. The following is a copy of the act:

AN ACT granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service.

[Approved February 15, 1893.]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be unlawful for any merchant ship or other vessel from any foreign port or place to enter any port of the United States except in accordance with the provisions of this act and with such rules and regulations of State and municipal health authorities as may be made in pursuance of, or consistent with, this act; and any such vessel which shall enter, or attempt to enter, a port of the United States in violation thereof shall forfeit to the United States a sum, to be awarded in the discretion of the court, not exceeding five thousand dollars, which shall be a lien upon said vessel, to be recovered by proceedings in the proper district court of the United States. In all such proceedings the United States district attorney for such district shall appear on behalf of the United States; and all such proceedings shall be conducted in accordance with the rules and laws governing cases of seizure of vessels for violation of the revenue laws of the United States.

SEC. 2. That any vessel at any foreign port clearing for any port or place in the United States shall be required to obtain from the consul, vice-consul, or other consular officer of the United States at the port of departure, or from the medical officer where such officer has been detailed by the President for that purpose, a bill of health, in duplicate, in the form prescribed by the Secretary of the Treasury, setting forth the sanitary history and condition of said vessel, and that it has in all respects complied with the rules and regulations in such cases prescribed for securing the best sanitary condition of the said vessel, its cargo, passengers, and crew; and said consular or medical officer is required, before granting such duplicate bill of health, to be satisfied that the matters and things therein stated are true; and for his services in that behalf he shall be entitled to demand and receive such fees as shall by lawful regulation be allowed, to be accounted for as is required in other cases.

The President, in his discretion, is authorized to detail any medical officer of the Government to serve in the office of the consul at any foreign port for the purpose of furnishing information and making the inspection and giving the bills of health hereinbefore mentioned. Any vessel clearing and sailing from any such port without such bill of health, and entering any port of the United States, shall forfeit to the United States not more than five thousand dollars, the amount to be determined by the court, which shall be a lien on the same, to be recovered by proceedings in the proper district court of the United States. In all such proceedings the United States district attorney for such district shall appear on behalf of the United States; and all such proceedings shall be conducted in accordance with the rules and laws governing cases of seizure of vessels for violation of the revenue laws of the United States.

SEC. 3. That the Supervising Surgeon-General of the Marine-Hospital Service shall, immediately after this act takes effect, examine the quarantine regulations of all State and municipal boards of health, and shall, under the direction of the Secretary of the Treasury, cooperate with and aid State and municipal boards of health in the execution and enforcement of the rules and regulations of such boards and in the execution and enforcement of the rules and regulations made by the Secretary of the Treasury to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, and into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia; and all rules and regulations made by the Secretary of the Treasury shall operate uniformly and in no manner discriminate against any port or place; and at such ports and places within the United States as have no quarantine regulations under State or municipal authority, where such regulations are, in the opinion of the Secretary of the Treasury, necessary to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, and at such ports and places within the United States where quarantine regulations exist under the authority of the State or municipality which, in the opinion of the Secretary of the Treasury, are not sufficient to prevent the introduction of such diseases into the United States, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, the Secretary of the Treasury shall, if in his judgment it is necessary and proper, make such additional rules and regulations as are necessary to prevent the introduction of such diseases into the United States from foreign countries, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, and when said rules and regulations have been made they shall be promulgated by the Secretary of the Treasury and enforced by the sanitary authorities of the States and municipalities, where the State or municipal health authorities will undertake to execute and enforce them; but if the State or municipal authorities shall fail or refuse to enforce said rules and regulations the President shall execute and enforce the same and adopt such measures as in his judgment shall be necessary to prevent the introduction or spread of such diseases, and may detail or appoint officers for that purpose. The Secretary of the Treasury shall make such rules and regulations as are necessary to be observed by vessels at the port of departure and on the voyage, where such vessels sail from any foreign port or place to any port or place in the United States, to secure the best sanitary condition of such vessel, her cargo, passengers, and crew; which shall be published and communicated to and enforced by the consular officers of the United States. None of the penalties herein imposed shall attach to any vessel or owner or officer thereof until a copy of this act, with the rules and regulations made in pursuance thereof, has been posted up in the office of the consul or other consular officer of the United States for ten days, in the port from which said vessel sailed; and the certificate of such consul or consular officer over his official signature shall be competent evidence of such posting in any court of the United States.

SEC. 4. That it shall be the duty of the Supervising Surgeon-General of the Marine-Hospital Service, under the direction of the Secretary of the Treasury, to perform all the duties in respect to quarantine and quarantine regulations which are provided for by this act, and to obtain information of the sanitary condition of foreign ports and places from which contagious and infectious diseases are or may be imported into the United States, and to this end the consular officer of the United States at such ports and places as shall be designated by the Secretary of the Treasury shall make to the Secretary of the Treasury weekly reports of the sanitary condition of the ports and places at which they are respectively stationed, according to such forms as the Secretary of the Treasury shall prescribe; and the Secretary of the Treasury shall also obtain, through all sources accessible, including State and municipal sanitary authorities throughout the United States, weekly reports of the sanitary condition of ports and places within the United States, and shall prepare, publish, and transmit to collectors of customs and to State and municipal health officers and other sanitarians weekly abstracts of the consular sanitary reports and other pertinent information received by him, and shall also, as far as he may be able, by means of the voluntary cooperation of State and municipal authorities, of public associations, and private persons, procure information relating to the climatic and other conditions affecting the public health, and shall make an annual report of his operations to Congress, with such recommendations as he may deem important to the public interests.

SEC. 5. That the Secretary of the Treasury shall from time to time issue to the consular officers of the United States and to the medical officers serving at any foreign port, and otherwise make publicly known, the rules and regulations made by him, to be used and complied with by vessels in foreign ports, for securing the best sanitary condition of such vessels, their cargoes, passengers, and crew, before their departure for any port in the United States, and in the course of the voyage; and all such other rules and regulations as shall be observed in the inspection of the same on the arrival thereof at any quarantine station at the port of destination, and for the disinfection and isolation of the same, and the treatment of cargo and persons on board, so as to prevent the introduction of cholera, yellow fever, or other contagious or infectious diseases; and it shall not be lawful for any vessel to enter said port to discharge its cargo, or land its passengers, except upon a certificate of the health officer at such quarantine station certifying that said rules and regulations have in all respects been observed and complied with, as well on his part as on the part of the said vessel and its master, in respect to the same and to its cargo, passengers, and crew; and the master of every such vessel shall produce and deliver to the collector of customs at said port of entry, together with the other papers of the vessel, the said bills of health required to be obtained at the port of departure and the certificate herein required to be obtained from the health officer at the port of entry; and that the bills of health herein prescribed shall be considered as part of the ship's papers, and when duly certified to by the proper consular officer or other officer of the United States, over his official signature and seal, shall be accepted as evidence of the statements therein contained in any court of the United States.

SEC. 6. That on the arrival of an infected vessel at any port not provided with proper facilities for treatment of the same, the Secretary of the Treasury may remand said vessel, at its own expense, to the nearest national or other quarantine station, where accommodations and appliances are provided for the necessary disinfection and treatment of the vessel, passengers, and cargo; and after treatment of any infected vessel at a national quarantine station, and after certificate shall have been given by the United States quarantine officer at said station that the vessel, cargo, and passengers are each and all free from infectious disease, or danger of conveying the same, said vessel shall be admitted to entry to any port of the United States named within the certificate. But at any ports where sufficient quarantine provision has been made by State or local authorities the Secretary of the Treasury may direct vessels bound for said ports to undergo quarantine at said State or local station.

SEC. 7. That whenever it shall be shown to the satisfaction of the President that by reason of the existence of cholera or other infectious or contagious diseases in a foreign country there is serious danger of the introduction of the same into the United States, and that notwithstanding the quarantine defense this danger is so increased by the introduction of persons or property from such country that a supension of the right to introduce the same is demanded in the interest of the public health, the President shall have power to prohibit, in whole or in part, the introduction of persons and property from such countries or places as he shall designate and for such period of time as he may deem necessary.

SEC. 8. That whenever the proper authorities of a State shall surrender to the United States the use of the buildings and disinfecting apparatus at a State quarantine station, the Secretary of the Treasury shall be authorized to receive them and to pay a reasonable compensation to the State for their use, if in his opinion they are necessary to the United States.

SEC. 9. That the act entitled "An act to prevent the introduction of infectious or contagious diseases into the United States, and to establish a national board of health," approved March 3, 1879, be, and the same is hereby repealed. And the Secretary of the Treasury is directed to obtain possession of any property, furniture, books, paper, or records belonging to the United States which are not in the possession of an officer of the United States under the Treasury Department which were formerly in the use of the National Board of Health or any officer or employé thereof.

SYNOPSIS OF THE QUARANTINE LAW.

Stripped of its legal verbiage this law provides, first, that no vessel shall enter a port of the United States from a foreign port without a bill of health, signed by the United States consul, or a medical officer of the United States Government; and provides a penalty of $5,000 to be imposed on any vessel coming into American waters without such bill of health. Furthermore, the vessel shall not be admitted to entry except in accordance with other provisions of the act, and with such regulations of State and municipal authorities as may be made consistently therewith; and before being permitted to enter or discharge its cargo or land its passengers a certificate must be obtained from the health officer at the quarantine station, certifying that the rules and regulations have in all respects been complied with, both on his part and on the part of said vessel and its master. This bill of health and the quarantine certificate are to be delivered to the collector of customs.

The Secretary of the Treasury is directed to make rules and regulations to be observed by vessels at ports of departure and on the voyage, and the President may detail a medical officer of the Government to serve in the office of the consul at any foreign port for the purpose of making the necessary inspection of vessels, to see that the regulations are complied with, to sign the bills of health, and to furnish information.

Consular officers are required to be notified by the Secretary of the Treasury of the regulations made with regard to vessels, cargoes, passengers, and crew at ports of departure and on the voyage; and of the regulations also to be observed in the inspection and treatment of vessels on arrival at ports of destination in the United States. The Supervising Surgeon-General of the Marine-Hospital Service is required to examine the quarantine regulations of all State and municipal boards of health, and at ports or places which are found to have no quarantine regulations under State or municipal authority, where such regulations are, in the opinion of the Secretary of the Treasury, necessary, and at ports or places where State or municipal regulations exist, which, in the opinion of the Secretary, are not efficient, the Secretary is empowered to make additional rules, which after being promulgated, are to be enforced by the sanitary authorities of the States and municipalities if they will undertake to execute and enforce them, but if said authorities refuse or fail, the President shall adopt such measures as are necessary to their enforcement.

The law further specifies that it shall be the duty of the Supervising Surgeon-General of the Marine-Hospital Service, under the direction of the Secretary of the Treasury, to perform all the duties in respect to quarantine and quarantine regulations which are provided for by this act.

It further provides that information shall be obtained of the sanitary condition of foreign ports and places through the consular officers of the United States; that weekly reports shall be obtained of the sanitary conditions of ports and places within the United States, and for the collection of such other information affecting climatic and other conditions of the public health as may be pertinent. Weekly extracts of the consular and other sanitary reports are to be prepared and published and transmitted to the collectors of customs, State and municipal health officers, and other sanitarians. The law further permits the Secretary of the Treasury to remand an infected vessel from any port, which is not provided with proper facilities, to the nearest national or other quarantine station, and after treatment at a national quarantine station, with a certificate furnished by the United States quarantine officer, a vessel shall be admitted to entry at any port of the United States named in the certificate. But at ports where sufficient quarantine provision has been made by State or local authorities the Secretary of the Treasury may direct vessels bound to said ports to undergo quarantine at said State or local station.

An important section of this act is that which gives the President the right to prohibit in whole or in part the introduction of persons and property from such countries or places as he shall designate, and for such period of time as he may deem necessary, whenever by reason of existence of cholera or other infectious or contagious disease in a foreign country there is serious danger of the introduction of the same into the United States, despite the quarantine defenses.

Provision is also made that if a State wishes to surrender the use of its quarantine buildings and disinfecting apparatus to the United States the Secretary of the Treasury is authorized to receive them and pay a reasonable compensation to the State for their use, though no specific appropriation is made for this purpose.

OPERATIONS OF THE BUREAU UNDER THE NEW LAW.

The first step under this new law was the framing of regulations for vessels at foreign ports. To assist in this duty a board of medical officers of the Marine-Hospital Service was convened, and the regulations framed were approved by the Secretary of the Treasury February 24, and duly promulgated. These regulations prescribe the form of the bill of health; the definition of an infected port; what vessels shall be inspected before the bill of health is granted; the time and method of making the inspection, with all necessary details for the enforcement of cleanliness and perfect sanitation, including disinfection, and relating both to the vessel itself and the cargo, crew, and the passengers, both steerage and cabin. In ports infected with cholera passengers of the cabin class must produce evidence as to abode during the four days immediately preceding embarkation, and if necessary they and their baggage may be detained and the baggage subjected to such disinfection as is necessary. Steerage passengers in a cholera infected port, or from a cholera infected place, must be detained five days under medical observation, and their personal effects and baggage must be disinfected by steam. The regulations further forbid the shipment of certain articles of bedding and clothing from an infected port, also certain articles of merchandise, such as old rags, old jute, and old gunny, during the prevalence of an epidemic and for thirty days after it has been officially declared at an end. All rags at all times are to be disinfected before shipment to the United States.

Under the law these regulations are to be enforced at foreign ports, either by United States consuls or by medical officers of the United States Government when said medical officers have been detailed by the President for that purpose.

An examination of the records shows that the chief ports of embarkation of the immigrants most liable to bring contagion are as follows:

Southampton, Liverpool, Hamburg, Bremen, Rotterdam, Amsterdam, Antwerp, Havre, Marseilles, Genoa, and Naples. Accordingly a medical officer of the Marine-Hospital Service was detailed by the President to serve in the office of the consul at each of the ports named.

For securing uniformity of action among these medical officers and that the Bureau might be informed as to any special difficulties in enforcing the regulations, an inspecting medical officer was detailed to visit each of these ports for the purpose named.

To aid these medical officers and the consuls in the performance of their duty a letter of instruction was issued by the State Department, addressed particularly to United States consuls at interior places in Europe and Asia, directing that when merchandise or immigrants were about to leave or had left any section within their respective consulates where cholera prevailed they should notify by telegraph the United States consul or medical officer at the seaport selected for embarkation that the officer might be prepared to enforce the detention and disinfection required.

On May 4 a circular was issued to consuls and medical officers, requiring all baggage of immigrants coming from any port to the United States to bear a label certifying to either inspection or disinfection. Furthermore, each immigrant was to be furnished with an inspection card, giving his name, last residence, name of ship, port, and date of departure and a reference number relating to the manifest which is required by the immigration regulations, and in which is contained much information regarding each immigrant. This card was to bear the stamp of the consulate. It was also to be stamped or punched at the quarantine at the port of arrival, and again at the immigration depot, and to be held by the immigrant until he reached his point of destination. These inspection tickets and the labels upon the baggage furnished to the health officers of the interior States information which they have always desired with regard to immigrants coming within their borders. These provisions also insured care and accuracy on the part of medical officers, and particularly on the part of United States consuls at ports where immigrants do not usually embark for the United States, but which might be sought by them in the hope of avoiding the enforcement of the stringent rules at ports where medical officers were stationed.

For the vessel on the voyage certain rules were promulgated relating to inspection and sanitation, isolation of the sick, and requiring a clinical history by the ship surgeon of all cases of sickness to be delivered to the quarantine officer at the port of arrival.

At one time there seemed to be imminent danger by reason of immigration through Canada. The Canadian laws do not provide for the inspection and sanitation of ships and passengers at foreign ports, and it was feared on this account there would be a large deflection of immigration to Canada. But owing to the public-spirited policy of the Canadian Government, and the energy and efficiency of the chief quarantine officer, Dr. Montizambert, the danger of introduction of cholera through Canada was reduced to the lowest possible degree short of prohibition of immigration. All immigration into Canada in summer is via the St. Lawrence River. Forty miles below Quebec is stationed the Grosse Isle quarantine station, with perfect apparatus for scientific disinfection and accommodations for the sick and suspects. This station is reserved for infected vessels. Further up the river at Quebec, is the Louise Embankment, where is located a complete disinfecting plant; while at Point Levis, directly opposite, is located another. All immigrants, whether from infected or noninfected countries and though coming on noninfected vessels were obliged to undergo inspection at one of these two points, and all their baggage is disinfected by steam, the containers being washed with a solution of mercury. The disinfection was not one in name; but was thorough and complete. The Canadian Government very courteously assented to allow representatives of the Marine-Hospital Service, two in number, to be stationed at Quebec for the purpose of inspecting the disinfection and labeling the baggage and giving certificates to immigrants bound for the United States.

It was feared at one time that Halifax would be a point of danger during the present season. Halifax is the winter port of entry for Canada, and it was proposed to continue the landing of immigrants there through the summer, but the steamship agents were informed that the quarantine plant at Halifax was insufficient; and therefore immigrants arriving there and seeking entrance into the United States through Canada would be subjected at the border to every possible delay through inspection and disinfection by the United States officers, or perhaps be turned back into Canada. Assurances were thereupon given that no immigrants would be carried to Halifax.

Protection against the introduction of cholera through Canada, therefore, was as complete as it could be made.

With regard to the quarantine and maritime ports in the United States the new law provided that an examination should be made of all State and local regulations, and if any were found insufficient, the Secretary of the Treasury should make additional ones. In accordance with this provision, a request was sent to all quarantine authorities to transmit their rules and regulations to the Marine-Hospital Bureau. A general response followed, and after examination it was evident that to determine upon the sufficiency of all, a minimum standard must be established embodying what should be required of every quarantine station in the United States.

A uniform quarantine code for the maritime ports of the United States had long been the desire of quarantine and sanitary officers, and heretofore all attempts had been futile.

A board of officers of the Marine-Hospital Service was summoned to prepare a code. After the rules and regulations had been prepared and before adjournment of the board, a conference was called of the quarantine officers of the Atlantic and Gulf coasts representing the cities and ports of Portland, Boston, Providence, New Haven, New York, New Jersey, Philadelphia, Wilmington, Del., Baltimore, Norfolk, Wilmington, N. C., Charleston, Savannah, Florida, Mobile, New Orleans, and Texas.

This conference was called to order the 16th of March and remained in session two days, the first day being devoted to a consideration of the rules which had been prepared, and discussion thereof, with the understanding that there would be no vote. The second day the rules were again read seriatim, discussed, and voted upon. After adjournment of the conference, the board continued its labors paying special attention to the views expressed in the conference. The rules thus perfected were then promulgated by the Secretary of the Treasury, April 4, and a letter inclosing them was sent to each maritime quarantine officer, calling attention to the law and to the fact that these were minimum requirements and requesting an expression of willingness and ability to execute them. Satisfactory responses were received from all ports. These regulations relate first, to inspection of vessels, stating what vessels shall be inspected, the time of inspection, and the method of making it. They define the quarantinable diseases; and declare under what circumstances vessels shall be placed in quarantine. They relate also to the treatment in quarantine, particularly of vessels infected with cholera and yellow fever, and the time of detention and care of the passengers arriving on such vessels. Special regulations relate to rags; also to vessels suspected only of being infected with yellow fever.

Following are the regulations in full, those issued February 24, 1893, relating to foreign quarantine, measures to be observed at sea, and to the government of national quarantine stations; those issued April 4, 1893, relating to quarantine at all domestic ports:

UNITED STATES QUARANTINE LAWS AND REGULATIONS.

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
February 24, 1893.

To Officers of the Treasury Department, Consular Officers, and others concerned:

Pursuant to the act of February 15, 1893, entitled "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service," the quarantine laws in force are published. The following regulations have been made thereunder, and are hereby promulgated according to the terms of the act. Additional regulations for the government of domestic ports will be promulgated hereafter.

CHARLES FOSTER, *Secretary.*

REGULATIONS.

ART. I. Masters of vessels about to depart from any foreign port for a port in the United States must procure from the United States consular or medical officer at such port of departure a bill of health.

Preliminary to the issue of such document the vessel shall be inspected by the consular or medical officer. This inspection will be required of all vessels about to depart from any infected port. Said inspection will also be required of *all vessels carrying passengers* from European, Asiatic, African, South American, Central American, Mexican, and West Indian ports.

Vessels engaged in the carrying trade on the North American coast or inland waters shall be exempt from the rules regarding inspection at ports of departure so long as the said port shall remain free from infection.

The following form for bill of health is hereby prescribed:

(FORM NO. ——.)

United States bill of health.

Name of vessel, ——. Nationality, ——. Rig, ——.
Tonnage, gross, ——. Net, ——. Iron or wood, ——.
Number of compartments, ——. For cargo, ——. For passengers, ——.
For crew, ——.
Name of captain, ——.
Name of medical officer, ——
No. officers, ——. No. stewards, ——. No. seamen, ——.
No. petty officers, ——. No. stewardesses, ——.
No. passengers, first cabin, ——. No. firemen, ——.
No. passengers, second cabin, ——. No. waiters, ——. No. unclassified, ——.
No. passengers, steerage, ——.
Total number of persons on board, ——.

Port of departure, ——.
Sickness last voyage, No. ——. Character, ——.
Where last from, ——.
This vessel is engaged in —— trade, and plies between —— and ——.
Sanitary condition of vessel, ——.
Source and potability of water supply present voyage, ——.
Source and sanitary condition of food supply present voyage, ——.
Nature of cargo, ——.
Sanitary history and condition of cargo, ——.
Sanitary history and condition of officers and crew, ——.

Sanitary condition of passengers and their effects:
First cabin, ———.
Second cabin, ———.
Steerage, ———.
Sufficiency of ventilation, ———.
Air space, ———. (Steerage and crew) ———.
Prevailing diseases at port and in surrounding country, ———.

Number of cases (if any) and deaths (if any) from the following named diseases during the past two weeks, ———.

Disease.	Number of cases.	Number of deaths.
Yellow fever		
Asiatic cholera or cholerine		
Plague		
Smallpox		
Typhus fever		

Any conditions affecting the public health existing in the ports of departure to be here stated.

I certify that the vessel has complied with the rules and regulations made under the act of February 15, 1893, and that the vessel leaves this port bound for ———, United States of America, via ———.

Given under my hand and seal this —— day of ———, 189–.

[L. S.] ——— ———,
United States Consul.

[L. S.] ——— ———,
Surgeon, United States Marine-Hospital Service.

(FORM NO. ——.)

Certificate of disinfection.

This certificate when given shall be considered part of the bill of health.

I hereby certify that I have this day personally supervised the disinfection of the steamship ———, about to clear for the port of ———; and that the vessel and all things on board requiring it have been disinfected in accordance with the regulations of the Secretary of the Treasury.

——— ———.

Infected port. Definition.

ART. II. Within the meaning of these regulations an infected port is a port where a contagious or infectious disease has been communicated to one person, or more than one, through the medium of an infected person, personal effects, or otherwise. A port is not considered infected when a single case, or a small number of cases, has been imported and the disease has not been communicated to others.

Inspection before departure.

ART. III. The inspection shall be made within six hours immediately preceding the departure, if practicable, and will be conducted as follows:

The inspector will first muster the officers, the crew, and will cause all the passengers, both cabin and steerage, to pass before him in review, and shall by tally count them, and verify the number as stated upon the ship's crew and passenger lists. (The inspector may refuse a bill of health if there are any alien passengers suffering from contagious disease or liable to death during the voyage). The inspector will then proceed to make a careful inspection of all parts of the vessel, and in case the quarters provided for passengers or crew shall be deemed inadequate, or in an uncleanly or unhealthy condition, the bill of health shall be withheld until the inspector is satisfied that the conditions have been removed. In case disinfection is required, disinfection shall be performed under the supervision of the inspector, according to the following regulations for disinfecting vessels, and a certificate of disinfection will accompany or be attached to the bill of health.

The inspector shall also inspect the food supply, and satisfy himself of the potability of the water intended to be served on board the vessel. In certifying the sanitary condition of the cargo the inspector will decline to certify linen, personal effects, or bedding suspected of being infected. Clothing used by persons who have died of cholera, "cholerine," typhus fever, plague, yellow fever, or smallpox, should not be received on board.

Rules applicable to all vessels.

ART. IV. Vessels prior to taking on cargo and passengers for any port in the United States shall be mechanically clean in all parts. Special attention must be paid to cleanliness and dryness of hold, forecastle, and steerage. The bilges and limbers must be clean, free from deposit, and without offensive odor, and disinfection of the vessel may be required if considered necessary by the consular or medical officer.

Should any contagious or infectious disease have occurred during the previous voyage the vessel shall be disinfected by the consular or medical officer on board, in accordance with rules hereinafter to be prescribed.

The air space and ventilation must conform to the following extracts from the Revised Statutes:

SEC. 4257. Every such vessel so employed in transporting passengers between the United States and Europe, and having space according to law for more than one hundred such passengers, shall have at least two ventilators to purify each apartment occupied by such passengers; one of which shall be inserted in the after part and the other in the forward part of the apartment, and one of them shall have an exhausting cap to carry off the foul air, and the other a receiving cap to carry down the fresh air. Such ventilators shall have a capacity proportioned to the size of the apartments to be purified, namely: If the apartments will lawfully authorize the reception of two hundred such passengers the capacity of each such ventilator shall be equal to a tube of twelve inches diameter in the clear, and in proportion for larger or smaller apartments. All such ventilators shall rise at least four feet six inches above the upper deck of any such vessel, and be of the most approved form and construction. If it appears from the report to be made and approved, as provided in section forty-two hundred and seventy-two, that such vessel is equally well ventilated by any other means, such other means of ventilation shall be deemed to be a compliance with the provisions of this section.

ART. V. The disinfection of iron vessels shall be as follows:

The disinfection of iron vessels.

1. *Holds.*—After mechanical cleansing the hold to be thoroughly washed with an acid solution of bichloride of mercury 1 to 800 (mercury 1 part, hydrochloric acid 2 parts, water 800 parts), applied to all surfaces by means of a hose. If danger is apprehended from the poisonous effects of the mercury deposited on the surfaces it can be subseqently washed down with clean water.

2. *Steerage.*—The same treatment should be given the steerage as the hold, but when there are steam pipes provided for each compartment (for the prevention of fire), steam disinfection of the steerage should be practiced. The temperature in all parts of the compartments to be not less than 100° C.

3. *The forecastle or apartment for crew.*—After mechanical cleansing the application of bichloride of mercury in the manner heretofore prescribed, or steam disinfection, if facilities are provided for the same.

4. *Officers' quarters, cabin, staterooms, etc.*—All compartments thereof to receive the same treatment coming under the same conditions as heretofore specified, with the following exceptions: The decorative and metal work in cabin, saloons, etc., should, after mechanical cleansing, have an application made of 2 per cent solution of pure carbolic acid, applied by means of a brush or cloths. After remaining for two hours wipe off with dry cloths.

Rules applicable to wooden vessels.

ART. VI. 1. In all wooden vessels coming from a port or place south of latitude 23° 30′ north, or which may have been exposed to the infection of yellow fever, the mechanical cleansing must be most thorough; the bilges, limbers, frame spaces, floor spaces, etc., must be clean, free from mud, chips, sawdust, and pieces of dunnage. The hold must be dry, free from rotten wood, and the air streaks must be sufficient in number and open for ventilation.

2. Water in tanks or hard close-grained rock is recommended for ballast.

3. Earth, sand, loam, or soft porous rock should not be used for ballast where hard rock or other suitable material can be obtained.

4. The disinfection is to be accomplished by—

First. Fumigation by sulphur dioxide 10 per cent strength, forty-eight to seventy-two hours' exposure; or

Second. Flushing or washing with acid solution or bichloride mercury (1 to 800). The bilges to be first flushed with sea water, pumped out, and then treated with acid solution of bichloride of mercury in large quantity, and allowed to remain in long contact. Cabins, forecastle, and other apartments to be thoroughly washed with bichloride solution, and all clothing, bedding, curtains, etc., to be subjected to moist steam disinfection for thirty minutesat 102° to 105° C.

Cargo. ART. VII. The following rules regarding cargo should be observed:

1. Certain articles of merchandise, or personal effects and bedding coming from a district known to be infected, or as to the origin of which no positive evidence can be obtained, and which the consular or medical officer has reason to believe are infected, should be subjected to disinfection prior to shipment by the processes prescribed for articles according to their class, and secondhand upholstered furniture, feather beds, pillows, and down quilts should not be shipped.*

2. During the existence of cholera, yellow fever, smallpox, typhus fever or plague in any port or place, all rags, old jute, old gunny gathered in such port or place should not be shipped during the prevalence of such epidemic, and for thirty days after the port or place shall be officially declared free from epidemic disease.

3. New merchandise in general may be accepted for shipment without question; and articles of new merchandise, textile fabrics, and the like, which have been packed or prepared for shipment in an infected port or place with a special view to protect the same from moisture incident to the voyage, may also be accepted and be exempted from disinfection.

4. All rags and all textile fabrics used in the manufacture of paper, collected or packed in any foreign port or place, must, prior to shipment to the United States, be subjected to disinfection by one of the following methods:

First. Boiling in water for not less than thirty minutes, all rags to be unbaled for this purpose.

Second. Exposure to steam for not less than thirty minutes, the steam to be of a temperature not less than 100° C. (212° F.) nor greater than 115° C. (239° F.).

Third. Exposure for not less than six hours to sulphurous acid gas, made by burning not less than 3 pounds of roll sulphur to each 1,000 cubic feet of space.

Fourth. Exposure for not less than six hours to an atmosphere containing 3 per cent of sulphurous-acid gas liberated from its liquid state (liquid sulphur dioxide).

In methods No. 2, No. 3, and No. 4, the rags must be well scattered upon racks, or so arranged that they can from time to time be turned in such a manner that all shall be exposed to the steam or gas.

In methods No. 3 and No. 4, the exposure to gas must be conducted in a closed apartment where the rags do not at any time occupy more than 50 per cent of the total cubic space, and the exposure to date from the complete combustion of all the sulphur.

5. The following articles—feathers for bedding, human hair unmanufactured, curled hair, wools, camel's hair, goat hair, wool on skins, fur on skins, fur for hatters' use, alpaca, hides, skins without wool, hide clippings, goat and sheep skins, gathered in districts where quarantinable diseases prevail, and which have not been disinfected prior to baling or packing—must be treated by one of the following methods:

First. By the application of a 2 per cent solution of carbolic acid, all parts of the material to be saturated.

Second. By exposure to sulphur dioxide, 6 per cent strength, from eight to ten hours, all articles to be unbaled and spread on racks.

6. Articles such as gelatine, glue, glue stock, fish glue, fish bladders, fishskins, sausage casings, bladders, dried blood, rennets raw or dried, not packed in close cases, and having been in any way liable to infection in the process of preparation, gathering, or shipment, should be spread on racks and exposed to sulphur dioxide, in 6 per cent strength, from eight to ten hours.

7. The coverings of crude sugar, glucose, and coffee shipped from an infected port or place should be disinfected without breaking bulk, by exposure to sulphur dioxide, 10 per cent in strength, for a period of twelve hours.

Officers and crew. ART. VIII. 1. In an infected port, the crew should remain on board the vessel during her stay.

2. Should it become necessary in an infected port to ship new men to complete the crew, such men should be examined by the consular or medical officer, and required to prove to his satisfaction that they have not within ten days previous been exposed to any quarantinable disease. In case of the prevalence of smallpox, all members of the crew shall be vaccinated, unless they can show to the consular or medical officer a satisfactory scar of recent vaccination. The dunnage and personal wear of the crew should be disinfected by steam† at 102° C. for thirty minutes prior to each voyage.

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* Food products, such as macaroni, vermicelli, vegetables in their natural state, fruit, fresh or dried, unsalted meats or meat products, dressed poultry, butter, milk, cheese, butterine, egg albumen, and the like, coming from a cholera-infected locality, should not be shipped. No method is known by which these articles can be disinfected.

† Boots and shoes, rubber goods, etc., which are injured by steam should be disinfected by 2 per cent carbolic acid solution, the articles to be fully submerged.

3. In an infected port, bedding, mattresses, bed sacks, and blankets used by the crew should be disinfected by exposure to steam at 102° C. for thirty minutes.

Passengers.

ART. IX. Passengers for purposes of these regulations are divided into two classes—cabin and steerage.

1. Prior to sailing from ports infected with cholera, each passenger of the cabin class should produce satisfactory evidence as to his exact place of abode during the four days immediately preceding embarkation, and if it appears that he or his baggage has been exposed to contagion, said passenger should be detained such length of time as shall be deemed necessary by the inspecting officer, and the baggage should be disinfected.

When practicable passengers should not ship from infected ports; but in cases where it is impracticable to do otherwise, the hand baggage of steerage passengers will be limited to necessary articles of apparel and bedding, and must be disinfected by steam at 102° C. for thirty minutes. Boots, shoes, hats, caps, gloves, and articles of leather which are injured by heat should be disinfected by submerging in a 2 per cent solution of carbolic acid, or in a bichloride of mercury solution (1 to 800).

2. Steerage passengers, namely, those occupying apartments other than first or second cabin, from any port or place where cholera may be prevailing should be detained five days under medical observation in specially designated barracks or houses set aside for their exclusive use. Pure water and wholesome food of a character satisfactory to the medical officer should be supplied to persons so detained. Steerage passengers should be bathed immediately upon the commencement of the four days' observation, and provided with disinfected clothing. The clothing removed should be disinfected by exposure to steam at 102° C. for thirty minutes.

3. Should cholera break out in the barracks or houses in which the passengers are undergoing the five days' observation, no passenger from said houses or barracks should embark until seven days or longer after the conclusion of the last case, and not until such measures have been taken as insures freedom from contagion of the remainder.

The rules prescribed for the disinfection of the baggage and personal effects of passengers and crew coming from cholera-infected ports should also be observed with regard to passengers and crew coming from ports and places where plague, yellow fever, typhus fever, or smallpox are prevailing in an epidemic form.

Passengers and crews, merchandise, and baggage prior to shipment at a noninfected port, but coming from an infected locality, should be subject to the same restrictions as are imposed in an infected port.

Rules to be observed on the voyage.

ART. X. The master of the vessel should cause the following rules (substantially as recommended by the International Sanitary Conference of Rome, 1885) to be observed during the voyage:

R. S. 4263.

The soiled body linen of passengers and crew suffering from infectious diseases should be washed at once, after immersion in boiling water or in a disinfecting solution.

The water closets should be washed and disinfected twice a day.

Rigorous cleanliness and active ventilation should be maintained during the voyage on board all ships, but especially those from infected ports.

1. An inspection of the vessel, including the steerage, should be made by the ship's physician once each day.

2. Should cholera (or cholerine), yellow fever, typhus fever, smallpox, or plague appear on board a ship while at sea, those who first show symptoms of these diseases will be immediately sent to the hospital; the ship's physician will then immediately notify the captain, and all of the effects liable to convey infection, which have been in use, will be destroyed or disinfected.

3. The compartments occupied by those who fall sick should be disinfected, and, as far as possible, the compartments thus disinfected should remain freely exposed to the air and unoccupied, and should not be occupied by any passengers in health for the remainder of the voyage. If the vessel is an iron steamer and the compartments suitable, the entire compartment should be disinfected by steam, when it may again be occupied. The articles liable to convey infection remaining in the compartments should be left undisturbed. After disinfection of the compartments the bedding and clothing can be removed and dried.

4. Patients in hospitals should be isolated.

5. The hospital should be disinfected in the manner hereinbefore prescribed as soon as it becomes vacant.

6. The dead should be enveloped in a sheet saturated with one of the strong disinfecting solutions, without previous washing of the body, and at once placed in a coffin hermetically sealed or buried at sea.

7. A clinical record should be kept by the ship surgeon of all cases of sickness in hospital, and delivered to the quarantine officer at the port of arrival on demand.

Under the foregoing paragraphs, disinfecting solutions are limited to the following—Strong: Acid solution of bichloride of mercury (1 to 500). A 1 to 20 solution of pure carbolic acid. Weak: Acid solution of bichloride of mercury, 1 to 1,000. Carbolic acid, 1 to 40.

RULES FOR THE GOVERNMENT OF NATIONAL QUARANTINES.

ART. XI. At United States ports where there is neither national nor local quarantine, vessels will not be admitted to entry until the collector of customs shall be satisfied that the vessel may be admitted without danger to the public health; and in case the said vessel shall be found to have quarantinable disease on board, or to have had such disease on board during the voyage, the collector of customs at such port may remand such vessel to the nearest national or other quarantine station where proper accommodations and appliances are provided, there to undergo purification and disinfection according to the regulations governing national quarantines.

1. Quarantine will be maintained at South Atlantic and Gulf quarantine stations from May 1 to November 1, and at Dry Tortugas from April 15 to November 15.

Boarding and inspection stations will be maintained throughout the year.

2. Quarantinable diseases are cholera, yellow fever, smallpox, plague, and typhus fever.

3. Vessels shall be inspected, without avoidable delay, between sunrise and sunset.

4. The quarantine officer shall at once demand from the master the prescribed bill of health. Should the vessel have no bill of health, she shall be detained and the fact reported at once to the collector of customs.

5. In making an inspection of a vessel, the bill of health, ship's log, and crew and passenger lists and manifests shall be examined, together with clinical record of all cases treated in hospital during the voyage. The crew and passengers shall be mustered, according to the lists, and any discrepancies found investigated.

6. Vessels arriving at any national quarantine station having quarantinable diseases on board, or having had cases during the voyage, or at port of departure, shall be placed in quarantine. After certificate of discharge shall have been given by the United States quarantine officer at said station, the vessel shall be admitted to entry under section 6 of act of February 15, 1893.

7. Pilots bringing infected vessels will be detained in quarantine a sufficient time to cover the period of incubation of the disease for which the vessel is quarantined, or if, in the opinion of the quarantine officer, such pilots have been exposed to infection. The dunnage of pilots shall be disinfected when necessary.

8. Prior to the discharge of ballast, or removal of suspected dunnage, a preliminary fumigation or disinfection may be required in the discretion of the quarantine officer, which shall be done by the quarantine employés only.

9. In cholera-infected vessels the water supply must be changed without delay, and the casks disinfected by steam or a 10 per cent solution of permanganate of potash, and thoroughly washed with pure water.

10. All persons on vessels detained on account of smallpox who have been exposed to the contagion will be immediately vaccinated.

11. After mechanical cleaning, discharge of ballast, or shifting of cargo, the vessel shall be disinfected by sulphur dioxide, not less than 10 per cent volume, twenty-four to forty-eight hours' exposure, followed by a washing with acid solution of bichloride of mercury (1 to 800).

12. Discharge of ballast and disinfection of the hold of a vessel will generally be unnecessary when the vessel is detained on account of smallpox.

13. In a wooden vessel fumigation should precede the washing with bichloride; apartments above decks to be closed twenty-four hours, and below decks from forty-eight to seventy-two (the time necessary to allow the sulphur dioxide to penetrate all dead spaces and rotten wood).

14. Objects of polished metal should be removed before fumigation of any compartment.

15. Mattresses, bedding, clothing, dunnage, and textile fabrics * should be exposed

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*Articles of rubber, leather, skins, celluloid, hats, and gutta-percha buttons, etc., are destroyed by this process, and should be disinfected by immersion in bichloride solution (1 to 800) or 2 per cent solution of carbolic acid, the articles to be wholly submerged.

to steam at a temperature of 102° C. for a period of thirty minutes after such temperature is reached.

16. Articles which can not be disinfected will be destroyed.

17. The detention of vessels for cholera, yellow fever, smallpox, and typhus fever shall cover the period of incubation of the disease, the time of detention to commence from the date of last exposure. Yellow fever, not less than five days; typhus fever, not less than twenty days; smallpox, except in cases of successful vaccination, not less than fourteen days; cholera, not less than five days.

18. Steam vessels from suspected or infected ports where yellow fever prevails may be allowed to enter any ports north of Baltimore, Md., after five days from date of departure from such port, without disinfection or detention, unless in bad sanitary condition, or with bad sanitary history.* In either case they will be detained in quarantine five days after disinfection. This regulation to apply to the North Atlantic coast only.

19. A vessel calling for orders, supplies, or coal only may be allowed to proceed, unless there is a quarantinable disease on board at the time, or such disease has been on board at ports en route, or at ports of departure, and when she is believed to be infected, in which case coal or supplies by barge can be towed to her, and she can take the coal or supplies from the barge with her own crew; but the local health officer at the port shall allow no person or dunnage from such vessel to go ashore.

20. Passengers on ships detained at quarantine shall be removed therefrom as soon after arrival as possible.

Passengers and crews detained at any national quarantine will be subject to rules and regulations promulgated from time to time by the Supervising Surgeon-General for their government.

REGULATIONS GOVERNING SANITARY REPORTS.

ART. XII. United States consular officers in foreign ports are required by law (and State and municipal health officers and registrars of vital statistics are requested) to furnish this Department with weekly reports of the sanitary condition of the ports or places where they may be respectively stationed, in order that the Secretary of the Treasury may comply with the law requiring the publication of weeky abstracts of the aforesaid reports. Public associations and private persons also are informed that their communications in regard to matters of public health will receive such attention as the subject-matter seems to warrant. Consular reports will be made to the Secretary of the Treasury in the manner prescribed in the following paragraphs of the Consular Regulations, subject to the modifications of the act of February 15, 1893:

"Par. 333. Section 2 of an act entitled 'An act to prevent the introduction of contagious or infectious diseases into the United States, approved April 29, 1878,' provides:

"'That whenever any infectious or contagious disease shall appear in any foreign port or country, and whenever any vessel shall leave any passengers coming from any infected foreign port, or having on board goods or passengers coming from any place or district infected with cholera or yellow fever, shall leave any foreign port, bound for any port in the United States, the consular officer or other representative of the United States at or nearest such foreign port shall immediately give information thereof to the Supervising Surgeon-General of the Marine-Hospital Service, and shall report to him the name, the date of departure, and the port of destination in the United States, and the consular officers of the United States shall make weekly reports to him of the sanitary condition of the ports at which they are respectively stationed.'

"334. The object of the foregoing section of the law is to secure timely advice of the outbreak of cholera and yellow fever, and of the probable transportation of the poisons of these preventable diseases in vessels bound for the United States, and consular officers for the United States are directed to put themselves into communication with the health authorities of their respective stations, and from the information obtained from such authorities, or from other reliable sources where no regularly constituted health authorities exist, to prepare and transmit by the mails to the Department of State, for the information of the Surgeon-General of the Marine-Hospital Service. on forms prescribed by the Department, weekly reports of the appearance, progress, or termination of cholera, yellow fever, smallpox, plague or typhus fever occurring in their respective localities, and are further instructed to include in said reports information in relation to the prevalence of other preventable diseases, as diphtheria, enteric and scarlet fevers, etc., the prevailing disease or diseases in port, if any, and, when practicable, the annual death rate per one thousand of the population, as shown by the official record of deaths for the week reported. Special interest should be taken in the healthfulness of vessels, reporting those arriving from or departing to the United States in a bad sanitary condition ; also reporting the facts of any serious sickness or unhealthiness of seamen in port, or of crews arriving from or departing to the United States.

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* The following circumstances are among those which shall constitute bad sanitary history for a vessel within the meaning of this paragraph: Sailing from a badly infected port; lying in a badly infected locality of any infected port; lying long in a harbor and having much communication with shore of an infected port; shipping men from shore in an infected port. Such men should not be allowed to leave the vessel save under the same conditions as passengers, or even more rigorous ones, as their dunnage may be exceedingly dangerous. If shipped from any other vessel without going ashore, save to consul's office, the condition of the vessel which they left is to be considered only.

"335. In the event of the outbreak of Asiatic cholera, yellow fever, or Asiatic plague, or other contagious disease in epidemic form, the Department must immediately be advised by cable or telegraph of such outbreak, using such abbreviation as the Department may from time to time direct."

The following cipher and abbreviations should be used:

"Cholera," meaning cholera has appeared.

"Yellow," meaning yellow fever has appeared.

The name of a country, meaning that the disease has made its appearance at several places in the country named.

The name of a vessel, meaning that the vessel named has departed from the place whence the dispatch is sent, bound for a port in the United States.

"Poison," meaning that the vessel referred to, though leaving a then healthy port, has on board passengers or goods (baggage) coming from a district infected with cholera or yellow fever.

When cholera or yellow fever has appeared at several places in a country, name the country only, after the word "cholera" or "yellow," as the case may be. If it has appeared at the place only from which the dispatch is sent, do not repeat the name of that place in the body of the dispatch, but if at any other particular place, name it.

In a dispatch announcing the departure of a vessel to a port in the United States, the port of departure will be understood to be the place from which the dispatch is sent; hence the name of the port of departure need not be repeated. In the body of a dispatch the name of the vessel should be given first; second, the name of the country, when applicable ; third, the day of departure, omitting the day of the month and of the year, as they will be understood without saying; fourth, the name of the port of destination (the importance of observing this order will appear obvious when it is understood that many vessels bear the name of ports in the United States); fifth, the name of the disease, "cholera" or "yellow," as the case may be, should be given, provided the Department has not been already advised of the outbreak of the disease. When advice has once been given of the appearance of cholera or yellow fever at a certain port, the name of the disease need not be repeated in dispatches announcing the subsequent departure of vessels from that port.

When the name of a vessel is given without stating whether it is a steamer or sailing vessel, it will be understood to be a steamer ; if the vessel is a sailing vessel, its proper designation should be prefixed. The sender of the dispatch should sign his last name only.

ART. XIII. The inspector will preserve in his office a record of each inspection so made. A copy of these reports will be forwarded weekly to the Supervising Surgeon-General.

In addition to the duties already prescribed, the medical officer when detailed under the act shall furnish such reports as he may be directed to furnish from time to time by the Supervising Surgeon-General.

LAWS AND REGULATIONS FOR THE MARITIME QUARANTINES OF THE UNITED STATES.

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
April 4, 1893.

To Officers of the Treasury Department, Maritime Quarantine Officers in the United States, Consular Officers, and others concerned:

Pursuant to act of February 15, 1893, entitled "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service," the quarantine laws in force are published, and the following regulations made thereunder for the government of domestic ports are hereby promulgated.

J. G. CARLISLE, *Secretary.*

PREAMBLE.

1. At or convenient to the principal ports of the United States, quarantine stations should be equipped with all appliances for the inspection and treatment of vessels, their passengers, crews, and cargoes.

2. At all other ports where such provisions have not been made inspection stations should be maintained.

3. An inspection service should be maintained at every port throughout the year.

4. At a fully equipped quarantine station there should be adequate provision for boarding and inspection, apparatus for mechanical cleaning of vessels, apparatus for steam disinfection, apparatus for disinfection with sulphur dioxide, apparatus for disinfecting solutions, hospitals for contagious and doubtful cases, detention barracks for suspects, bathing facilities, crematory, and sufficient supply of good water.

5. The personnel of quarantine stations in the yellow-fever zone and on fruiters for southern ports should be immune against yellow fever.

6. At quarantine stations all articles liable to convey infection should be handled only by the employés of said station unless the services of the crew are indispensable.

7. Vessels having been treated at national quarantine stations that are located a considerable distance from the ports of entry of said vessels may be inspected by the local quarantine officer, and if for any sanitary reason it is considered inadvisable to admit the vessel he should report the facts immediately to the Supervising Surgeon-General M. H. S., detaining the vessel pending his action.

8. The following regulations are the required minimum standard and do not prevent the addition of such other rules as, for special reasons, may be legally made by State or local authorities.

REGULATIONS FOR MARITIME QUARANTINE AT UNITED STATES PORTS.

ARTICLE I.—INSPECTION.

1. Vessels arriving at ports of the United States under the following conditions shall be inspected by a quarantine officer prior to entry.*

A. Any vessel with sickness on board.

B. All vessels from foreign ports.

Exceptions.—Vessels not carrying passengers on inland waters of the United States. Vessels from the Pacific and Atlantic coasts of British America, provided they do not carry persons or effects of persons nonresident in America for the ninety days next preceding arrival, and provided always that the port of departure be free from quarantinable disease. Vessels from other foreign ports via these excepted ports shall be inspected.

C. Vessels from foreign ports having entered a port of the United States without complete discharge of passengers and cargo. Such vessels shall be subject to a second inspection before entering any other port. Vessels from ports suspected of infection with yellow fever, having entered a port north of the southern boundary of Maryland without disinfection, shall be subjected to a second inspection before entering any port south of said latitude during the quarantine season of such port.

2. The inspection of vessels required by these regulations shall be made between sunrise and sunset, except in case of vessels in distress.

3. The quarantine officer shall at once demand from the master the prescribed bill of health. Should the vessel have no bill of health, the fact shall be reported at once to the collector of customs.

4. In making the inspection of a vessel, the bill of health and crew and passengers' lists and manifests, and, when necessary, the ship's log, shall be examined, together with the clinical record of all cases treated in hospital during the voyage. The crew and passengers shall be mustered and examined and compared with the lists and manifests and any discrepancies investigated.

ARTICLE II.—QUARANTINE.

1. For the purpose of these regulations the quarantinable diseases are cholera (cholerine), yellow fever, smallpox, plague, and typhus fever.

2. Vessels arriving under the following conditions shall be placed in quarantine:

A. With quarantinable disease on board.

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*At ports at which there is no quarantine officer any physician authorized by the surveyor or collector of customs for the purpose of making inspection shall be considered as a quarantine officer *pro tem.*

B. Having had such on board during the voyage or within thirty days next preceding arrival; or, if arriving in the quarantine season, having had yellow fever on board after March 1 of the current year, unless satisfactorily disinfected thereafter.

C. Vessels having had cholera on board within six months, unless satisfactorily disinfected thereafter.

D. From ports *infected* with yellow fever, cholera, plague, or where typhus fever prevails in epidemic form, coming directly or via another foreign port, or via United States ports, unless disinfected as prescribed by the United States quarantine regulations; also vessels from noninfected ports but bringing persons or cargo from places infected with cholera, yellow fever, plague, or where typhus fever prevails in epidemic form, except as subsequently noted.

E. Vessels from ports in the West Indies on the east coast of America between 23° 30′ N. and 32° S. latitude, and from the west coast of Africa between 23° 30′ N. and 10° S. latitude, except such as are known and declared by the Supervising Surgeon-General to be free from infection, arriving at any port in the United States.

Exceptions.—The following exceptions may be made to Rules D and E with regard to vessels from ports quarantined against on account of yellow fever:

(1) Vessels arriving during certain seasons of the year, to wit, from November 1 to May 1, may be admitted to entry.

(2) Vessels bound for ports in the United States north of the southern boundary of Maryland, with good sanitary condition and history, having had no sickness on board at ports of departure en route or on arrival, provided they have been five days from last infected or suspected port, may be allowed entry at port of destination. But if said vessels carry passengers destined for places south of this latitude, the baggage of said passengers shall be disinfected.

(3) A vessel calling for orders, supplies, or coaling only may be allowed to proceed, unless there is a quarantinable disease on board at the time, or such disease has been on board at ports en route or at ports of departure, and when she is believed to be infected, in which case coal or supplies by barge can be towed to her, and she can take the coal or supplies from the barge with her own crew; but the local health officer at the port shall allow no person or dunnage from such vessel to go ashore.

(4) Vessels not carrying passengers nor having carried passengers from one port to another and having held no communication with any other vessel engaged in the fruit trade, carrying only fruit, unwrapped rubber, or specie, from ports known to be healthy, and so declared by the Supervising Surgeon-General M. H. S., may be admitted to entry without detention, provided they have complied in every respect with the rules and regulations made by the Secretary of the Treasury for such ports.

3. Persons who arrive on vessels coming from any port or place where smallpox is prevailing in epidemic form or having had smallpox on board must be vaccinated or show satisfactory evidence of recent vaccination or of having had smallpox, or be detained in quarantine not less than fourteen days, and all effects and compartments liable to convey infection disinfected.

4. All passengers occupying apartments other than first and second cabin shall be vaccinated prior to entry, unless they can show that they have had smallpox, or have been recently successfully vaccinated, or be detained in quarantine fourteen days.

ARTICLE III.—TREATMENT IN QUARANTINE OF CHOLERA-INFECTED VESSELS.

1.*Remove all persons from the vessel (if cholera has occurred on board) save those necessary to care for her. Place the sick in hospital and carefully isolate those specially suspected. Segregate the remainder in small groups wherever it is practicable. Those believed to be especially capable of conveying infection must not enter the barracks until they are bathed and furnished with sterile clothing; nor should any material capable of conveying infection be taken into the barracks, especially food.

2. At once proceed with the disinfection of the hand baggage, and, where practicable, bathe those detained.

3. If cholera has occurred in the steerage, all occupants thereof must be bathed.

4. All baggage and effects accompanying steerage passengers and any baggage or effects that may have been exposed to infection must be disinfected.

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*It is required only if cholera has occurred on board.

5. Such articles of cargo as are liable to convey infection must be disinfected.

6. All living apartments and furniture and such other portions of a vessel as are liable to convey infection shall be disinfected.

7. On cholera-infected vessels the water supply must be changed without delay, the casks or tanks disinfected by steam or 10 per cent solution of potassium permanganate, and after thorough rinsing refilled from a source of undoubted purity, or the water supplied be recently boiled.

8. Nothing shall be thrown overboard from a cholera-infected vessel, not even deck sweepings. Such things shall be burned in the furnace or in a place specially designated, but not in the galley.

9. No communication shall be allowed between any vessel in quarantine and the shore or any other vessel, except through the quarantine officer, or by his order, through his agents.

10. The disinfection of iron vessels shall be as follows:

(*a*) *Holds.*—After mechanical cleansing, the hold to be thoroughly washed with an acid solution of bichloride of mercury 1 to 800 (mercury 1 part, hydrochloric acid 2 parts, water 800 parts), applied to all surfaces by means of a hose. If danger is apprehended from the poisonous effects of the mercury deposited on the surfaces they can be subsequently washed down with clean water.

(*b*) *Steerage.*—The same treatment should be given the steerage as the hold, but when there are steam pipes provided for each compartment (for the prevention of fire), steam disinfection of the steerage should be practiced. The temperature in all parts of the compartments to be not less than 100° C.

(*c*) *The forecastle or apartment for crew.*—After mechanical cleansing, the application of bichloride of mercury in the manner heretofore prescribed, or steam disinfection, if facilities are provided for the same.

(*d*) *Officers' quarters, cabin, staterooms, etc.*—All compartments thereof to receive the same treatment coming under the same conditions as heretofore specified, with the following exceptions: The decorative and metal work in cabin, saloons, etc., should, after mechanical cleansing, have an application made of 3 per cent solution of pure carbolic acid, applied by means of a brush or cloths. After remaining for two hours, wipe off with dry cloths.

(*e*) Disinfection by twenty-four hours' exposure to 10 per cent volume of sulphur dioxide, after mechanical cleansing, may be substituted in each of the above *a*, *b*, *c*, and *d*.

11. Leather cushions shall be wetted with 3 per cent solution of pure carbolic acid, and upholstered goods may be treated in the same way, or by steam.

12. The water ballast of a vessel coming from a cholera-infected port should be discharged at sea, or if discharged in fresh or brackish water, must be previously disinfected; the tanks to be refilled with sea water or disinfected.

13. For a wooden vessel the treatment is as above, except that fumigation of the hold and living apartments with sulphur dioxide, 10 per cent volume, must precede the other treatment for the hold forty-eight to seventy-two hours; for the living apartments, twelve hours.

14. All solid ballast to be discharged or disinfected previous to disinfection of hold. All ballast discharged ashore or in fresh water to be disinfected. Only clear, hard, close-grained rock may be permitted to remain on board after disinfection by dipping (immersing) in an acid solution, 1 to 800, of bichloride of mercury. Ballast removed from vessels must not be taken from the quarantine station.

ARTICLE IV.—DETENTION OF PASSENGERS ON ACCOUNT OF CHOLERA.

1. The people detained shall be inspected by the physician twice daily and be under constant surveillance, and no intercourse will be allowed between different groups while in quarantine.

2. The water and food supply will be strictly guarded to prevent contamination.

3. In any group in which cholera appears the sick will be immediately isolated in hospital, and the remaining persons in the group shall again undergo disinfection and be detained not less than five days thereafter.

4. After five days from last exposure to infection, any group among which no choleraic disease has developed may be released from quarantine after a final disinfection of clothing.

5. Food of a simple character, sufficient in quantity, thoroughly cooked, shall be issued to those detained in quarantine. No fruit shall be permitted.

6. Cleanliness and disinfection of quarters and cleanliness of person shall be

enjoined and enforced daily. Disinfectants shall be used where there is any possibility of infection.

7. Water-closets, urinals, privies, or troughs shall be provided, and means used for their disinfection before their contents are discharged into pits of unslacked lime.

8. The body of no person dead of cholera shall be allowed to pass through quarantine. The body should be cremated, if practicable. If not, it should be wrapped without preliminary washing in a sheet saturated with a solution of bichloride of mercury, 1 to 500, and buried, surrounded by caustic lime.

ARTICLE V.—DISINFECTION OF CARGO OF CHOLERA-INFECTED VESSELS.

1. Articles of cargo requiring it will be disinfected by—

(*a*) Steam heat of 100° C. for not less than thirty minutes after such temperature is reached, or by boiling the same length of time.

(*b*) Wetting thoroughly with bichloride solution, 1 to 800, or with 3 per cent solution of pure carbolic acid.

(*c*) Exposure to sulphur dioxide, volume of 10 per cent, for not less than twelve hours.

2. Clothing and bedding will be disinfected by—

(*a*) Exposure to steam from 100° to 102° C. for thirty minutes after such temperature is reached. or by boiling for thirty minutes.

(*b*) Immersing in bichloride solution, 1 to 800, or solution of pure carbolic acid, 3 per cent, until thoroughly wetted, and allowed to dry before washing.

This last process (*b*) to be used only for articles that will be injured by steam or boiling.

ARTICLE VI.—RAGS.

1. All rags and old textile fabrics used in the manufacture of paper, and all old gunny, old jute, etc., fit only for remanufacture, gathered, collected, packed, or shipped from or via any port or place where cholera (cholerine), yellow fever, or plague exists, or where smallpox or typhus fever prevails in epidemic form, and for thirty days after the port or place shall be officially declared free from such diseases or epidemic, shall be denied entry into any port of the United States.

2. No rags or old textile fabrics used in the manufacture of paper or articles enumerated in 1, Article VI, which have not been disinfected in accordance with Article VII, paragraph 4, of the United States Laws and Regulations, February 24, 1893, shall be admitted into the United States.

ARTICLE VII.—TREATMENT OF VESSELS INFECTED OR SUSPECTED OF BEING INFECTED WITH YELLOW FEVER.

1. Where practicable, at once remove the sick to hospital and remove and isolate all persons not required for the care of the vessel.

2. If the hold is deemed infected, there shall be a preliminary disinfection of the same with sulphur dioxide and bichloride solution.

3. All ballast except close-grained hard rock must be discharged. This may be retained aboard if disinfected by dipping (immersion) in an acid solution of bichloride of mercury, 1 to 800.

4. The bilge should be cleansed with sea water, if possible, before disinfection, and the hold rendered mechanically clean.

5. After discharge or disinfection of ballast the vessel should be disinfected as provided in Article III, paragraphs *a*, *b*, *c*, and *d* of these regulations, treating living rooms in addition with fumigation with sulphur dioxide, 4 per cent, twenty-four hours' exposure.

6. All baggage and clothing, bedding, hangings, etc., shall be disinfected by steam at 100° to 102° C. for thirty minutes after such temperature is reached, or boiling thirty minutes Articles liable to injury by steam or boiling should be disinfected by immersion in solution of bichloride of mercury, 1 to 800, or solution of pure carbolic acid, 3 per cent, all articles to be wholly submerged and thoroughly wetted.

7. Cargo shall be disinfected *in situ*, if possible, by thorough aëration, followed by fumigation with sulphur dioxide, 10 per cent strength, forty-eight hours' exposure. Where it is impossible to disinfect *in situ*, the cargo should be removed and disinfected.

8. The personnel of the vessel shall be detained *five* days from completion of the disinfection, *or three days if all packed effects of passengers, crew, and vessel are handled exclusively by quarantine employés.**

9. Persons arriving on a vessel upon which yellow fever has occurred at port of departure, on the voyage, or on arrival, shall be detained not less than five days from the completion of disinfection.

10. If disinfected under the supervision of an accredited medical officer of the United States at the port of departure, the period of quarantine may date from completion of such disinfection, and shall not be less than five days.

11. Passenger traffic may be allowed during the quarantine season from Havana to any southern port of the United States under the following conditions:

(*a*) Vessels to be of iron and clean immediately prior to taking on passengers.

(*b*) The vessel must lie at moorings in the open harbor at Havana, and not approach the wharves, nor must the crew be allowed ashore.

(*c*) All passengers and crew must be immune to yellow fever.†

(*d*) All baggage and articles liable to convey infection shall be disinfected as required by United States laws and regulations at port of departure or port of arrival in the United States. No bedding or household effects to be allowed to enter.

RULES FOR THE GOVERNMENT OF NATIONAL QUARANTINES.

ART. VIII. At United States ports where there is neither national nor local quarantine, vessels will not be admitted to entry until the collector of customs shall be satisfied that the vessel may be admitted without danger to the public health; and in case the said vessel shall be found to have quarantinable disease on board, or to have had such disease on board during the voyage, the collector of customs at such port may remand such vessel to the nearest national or other quarantine station where proper accommodations and appliances are provided, there to undergo purification and disinfection according to the regulations governing national quarantines.

1. Quarantine will be maintained at South Atlantic and Gulf quarantine stations from May 1 to November 1, and at Dry Tortugas from April 15 to November 15. Boarding and inspection stations will be maintained throughout the year.

2. Quarantinable diseases are cholera, yellow fever, smallpox, plague, and typhus fever.

3. Vessels shall be inspected, without avoidable delay, between sunrise and sunset.

4. The quarantine officer shall at once demand from the master the prescribed bill of health. Should the vessel have no bill of health she shall be detained and the fact reported at once to the collector of customs.

5. In making an inspection of a vessel the bill of health, ship's log, and crew and passenger lists and manifests shall be examined, together with clinical record of all cases treated in hospital during the voyage. The crew and passengers shall be mustered, according to the lists, and any discrepancies found investigated.

6. Vessels arriving at any national quarantine station having quarantinable diseases on board, or having had cases during the voyage, or at port of departure, shall be placed in quarantine. After certificate of discharge shall have been given by the United States quarantine officer at said station the vessel shall be admitted to entry under section 6 of act of February 15, 1893.

7. Pilots bringing infected vessels will be detained in quarantine a sufficient time to cover the period of incubation of the disease for which the vessel is quarantined or if, in the opinion of the quarantine officer, such pilots have been exposed to infection. The dunnage of pilots shall be disinfected when necessary.

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*Although it is known that the period of incubation of yellow fever may be over three and in some cases more than five days, the statistics, so far as can be obtained, of the *quarantines* of the United States demonstrate that the three days' detention after completion of disinfection is reasonably safe with regard to *suspected* vessels. To this practice is the added requirement that packed effects of passengers, crew, and vessel are to be handled exclusively by quarantine employés. While three days is the minimum required under the above conditions, it is recommended that five days' detention be imposed, as provided for at the national quarantine stations.

†The evidence of immunity which may be accepted by the sanitary inspector is:

First. Proof of continued residence in an enidemic focus of yellow fever for ten years.

Second. Proof of previous attack of yellow fever.

8. Prior to the discharge of ballast, or removal of suspected dunnage, a preliminary fumigation or disinfection may be required in the discretion of the quarantine officer, which shall be done by the quarantine employés only.

9. In cholera-infected vessels the water supply must be changed without delay, and the casks disinfected by steam or a 10 per cent solution of permanganate of potash, and thoroughly washed with pure water.

10. All persons on vessels detained on account of smallpox who have been exposed to the contagion will be immediately vaccinated.

11. After mechanical cleaning, discharge of ballast, or shifting of cargo, the vessel shall be disinfected by sulphur dioxide, not less than 10 per cent volume, twenty-four to forty-eight hours' exposure, followed by a washing with acid solution of bichloride of mercury (1 to 800).

12. Discharge of ballast and disinfection of the hold of a vessel will generally be unnecessary when the vessel is detained on account of smallpox.

13. In a wooden vessel fumigation should precede the washing with bichloride; apartments above decks to be closed twenty-four hours, and below decks from forty-eight to seventy-two (the time necessary to allow the sulphur dioxide to penetrate all dead spaces and rotten wood).

14. Objects of polished metal should be removed before fumigation of any compartment.

15. Mattresses, bedding, clothing, dunnage, and textile fabrics* should be exposed to steam at a temperature of 102° C. for a period of thirty minutes after such temperature is reached.

16. Articles which can not be disinfected will be destroyed.

17. The detention of vessels for cholera, yellow fever, smallpox, and typhus fever shall cover the period of incubation of the disease, the time of detention to commence from the date of last exposure. Yellow fever, not less than five days; typhus fever, not less than twenty days; smallpox, except in cases of successful vaccination, not less than fourteen days; cholera, not less than five days.

18. Steam vessels from suspected or infected ports where yellow fever prevails may be allowed to enter at the port of Baltimore and ports north of Baltimore, Md., after five days from date of departure from such port, without disinfection or detention, unless in bad sanitary condition, or with bad sanitary history.† In either case they will be detained in quarantine five days after disinfection. This regulation to apply to the North Atlantic coast only.

19. A vessel calling for orders, supplies, or coal only may be allowed to proceed, unless there is a quarantinable disease on board at the time, or such disease has been on board at ports en route, or at ports of departure, and when she is believed to be infected, in which case coal or supplies by barge can be towed to her, and she can take the coal or supplies from the barge with her own crew; but the local health officer at the port shall allow no person or dunnage from such vessel to go ashore.

20. Passengers on ships detained at quarantine shall be removed therefrom as soon after arrival as possible.

Passengers and crews detained at any national quarantine will be subject to rules and regulations promulgated from time to time by the Supervising Surgeon-General for their government.

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*Articles of rubber, leather, skins, celluloid, hats, and gutta-percha buttons, etc., are destroyed by this process, and should be disinfected by immersion in bichloride solution (1 to 800) or 2 per cent solution of carbolic acid, the articles to be wholly submerged.

†The following circumstances are among those which shall constitute bad sanitary history for a vessel within the meaning of this paragraph: Sailing from a badly infected port; lying in a badly infected locality of any infected port; lying long in a harbor and having much communication with shore of an infected port; shipping men from shore in an infected port. Such men should not be allowed to leave the vessel save under the same conditions as passengers, or even more rigorous ones, as their dunnage may be exceedingly dangerous. If shipped from any other vessel without going ashore, save to consul's office, the condition of the vessel which they left is to be considered only.

ADDITIONAL PRECAUTIONARY MEASURES TAKEN AGAINST THE INTRODUCTION OF CHOLERA.

[Circular.]

DISINFECTION OF EFFECTS AND BAGGAGE OF IMMIGRANTS AND OTHERS.

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
Washington, D. C., January 21, 1893.

To collectors of customs, medical officers of the United States Marine-Hospital Service, immigation officers and others:

The Department finds it necessary to call your attention to the provisions of Circulars No. 141, of August 17, 1892, and No. 147, of August 24, 1892, in regard to the disinfection of the personal effects and baggage of immigrants prior to embarkation. The circular of August 17 provides for such disinfection of baggage coming from Russia or from any cholera-infected districts, while the circular of August 24 extends these provisions to include the baggage and personal effects of immigrants from all European and Asiatic ports.

In case no consular certificate of such disinfection at the port of embarkation can be produced by the owners of such baggage, or if, for any reason, the supervising officers shall deem further disinfection desirable, the baggage of immigrants and of all other steerage passengers must be disinfected by the officers of the Marine-Hospital Service prior to delivery.

Recent circumstances have made it imperatively necessary that the utmost care should be exerted in regard to the matters treated of herein.

O. L. SPAULDING, *Acting Secretary.*

[Circular.]

AMENDMENT TO QUARANTINE REGULATIONS.

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
Washington, D. C., March 10, 1893.

Paragraph 18, Article XI, of the United States Quarantine Laws and Regulations, February 24, 1893, is hereby amended to read as follows:

"Steam vessels from a suspected or infected port where yellow fever prevails may be allowed to enter at the port of Baltimore and ports north of Baltimore, Md., after five days from date of departure from such ports without disinfection or detention unless in bad sanitary condition or with bad sanitary history. In either case they will be detained in quarantine five days after disinfection. This regulation to apply to the North Atlantic coast only."

J. G. CARLISLE, *Secretary.*

[Circular.]

ADDITION TO ARTICLE 3 OF THE QUARANTINE REGULATIONS OF FEBRUARY 24, 1893.

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
Washington, D. C., March 13, 1893.

Inspection of passengers taken on board vessels touching at intermediate foreign ports, and subject to inspection under the provisions of Article 1, shall be made by the consular officer of the United States at said port in the manner prescribed for inspection at the port of departure. In case there shall be no consular officer at such port, then the inspection shall be made by the local health officer. Certificate of such inspection shall be made by said inspecting officer, and shall be attached to and become a part of the vessel's bill of health.

J. G. CARLISLE, *Secretary.*

[Circular.]

RELATING TO THE LABELING OF BAGGAGE AND THE ISSUE OF INSPECTION CARDS TO STEERAGE AND CABIN PASSENGERS.

TREASURY DEPARTMENT,
Washington, D. C., May 4, 1893.

To consular officers of the United States, medical officers of the United States serving in foreign ports, and others:

In accordance with the act of Congress approved February 15, 1893, it is hereby ordered that, until further notice, all baggage of steerage passengers destined for the United States shall be labeled. If the baggage has been inspected and passed the label shall be a *red* label, bearing the name of the port, the steamship on which the baggage is to be carried, the word *inspected* in large type, the date of inspection, and the seal or stamp of the consulate or of the medical officer of the United States serving in the office of the consul. All baggage that has been *disinfected* shall be pasted with a *yellow* label, upon which shall be printed the name of the port, the steamship upon which the baggage is to be carried, the word *disinfected* in large type, the date of disinfection, and the seal or stamp of the consulate or of the medical officer of the United States serving in the office of the consul. It is understood, and it will be so printed on the blank, that the label is not valid unless bearing the consular or medical officer's stamp or seal.

It is further ordered that each immigrant or steerage passenger shall be furnished with an inspection card (see form below), on which shall be inscribed or stamped the port of departure, name of the steamship, date of departure, name of immigrant or steerage passenger and last residence, and the seal or stamp of the United States consulate or the detailed medical officer. This card is to be retained by the immigrant until he reaches his point of destination in the United States, and is for the purpose of giving information to the maritime quarantine officers of the United States and the health officers of the several States through whose boundaries the immigrant must pass, and will greatly facilitate his transportation. The card will also contain blank spaces for stamping at the local quarantines of the United States and at the immigration stations. On the same card are blank spaces to be filled in by the ship's surgeon or agent, when it is desired by the steamship company to utilize this card for compliance with article 13 of the Immigration Regulations promulgated April 25, 1893; also a column indicating the inspection by the ship's surgeon of each immigrant during the voyage, as demanded by the local quarantine officer at the port of arrival.

On the reverse of the card is a certificate of vaccination, to be filled out when the immigrant has been vaccinated; also instructions, in several languages, to the immigrant to retain the card until he reaches his destination in the United States in order to avoid detention.

This card is to be issued by the consular or medical officer to each steerage passenger, to every member of a family as well as to the head thereof. If not used by the steamship in complying with article 13 of the Immigration Regulations, April 25, 1893, a separate card must be furnished by the vessel, in compliance with the law.

Cabin passengers from cholera-infected ports or places shall be given a special inspection card, on which shall be printed the port of departure, name of passenger, name of ship, date of departure, and an indicated space for the seal or stamp of the consular or medical officer.

The baggage of said cabin passengers shall be properly labeled.

J. G. CARLISLE, *Secretary.*

INSPECTION CARD.

[Immigrants and steerage passengers.]

Port of departure .... Date of departure,

Name of ship ....

Name of immigrant .... Last residence ....

Inspected and passed at .... [Seal or stamp of consular or medical officer.]	Passed at quarantine, port of .... U. S. .... [Date.]	Passed by Immigration Bureau port of .... [Date.]

[The following to be filled in by ship's surgeon or agent prior to or after embarkation.]

Ship's list or manifest .... No. on ship's list or manifest ....

Berth No.	Steamship inspection.	1st day.	2	3	4	5	6	7	8	9	10	11	12	13	14	To be punched by ship's surgeon at daily inspection.

[Reverse side.]

Keep this card to avoid detention at quarantine and on railroads in the United States.

Diese Karte muss aufbewahrt werden, um Aufenthalt an der Quarantäne, sowie auf den Eisenbahnen der Vereinigten Staaten zu vermeiden.

Cette carte doit être conservée pour éviter une détention à la Quarantaine, ainsi que sur les chemins de fer des Etats-Unis.

Deze kaart moet bewaard worden, ten einde oponthoud aan de Quarantijn, alsook op de ijzeren wegen der Vereenigde Staten te vermijden.

Conservate questo biglietto onde evitare detenzione alla Quarantina e sulle Ferrovie degli Stati Uniti.

Tento lístek musíte uschovati, nechcete-li ukarantény (zastavení ohlednê zjištêni zdraví) neb na dráze ve spojenych státech zdrźení bỳti.

Tuto kartoćku treba trímat' u sebe aby sa predešlo zderžovańu v karantene aj na železnici ve Spojenych Státoch.

VACCINATED.

[Signature or stamp.]

[Circular.]

INSPECTION OF IMMIGRANTS AND THEIR BAGGAGE.

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
Washington, D. C., June 1, 1893.

To customs officers, quarantine officials, and immigrant inspectors:

Hereafter alien immigrants shall not be permitted to enter the United States at places on the Canadian and Mexican frontiers between the hours of 6 o'clock p. m. and 7 o'clock a. m. All alien immigrants and their baggage arriving at such places must be subjected to the inspection now prescribed by the immigration, quarantine, and customs laws of the United States so far as the same can be made applicable in the transit of persons and baggage by railroad and inland navigation.

Where such inspections have been made by the proper officers upon landing of immigrants at ports in the United States, and the route by which such immigrants in proceeding directly to destination passes through foreign territory from one point to another in the United States, such immigrants will not be subject to reinspection at the point of reentry into this country.

Immigrants who, with their baggage, were inspected by an officer of the United States Marine-Hospital Service upon landing at any port on the American Continent, will be exempt from further quarantine inspection unless there is reason to believe that disease has developed among such immigrants since such landing and inspection.

J. G. CARLISLE, *Secretary.*

[Circular.]

ADDITIONS AND AMENDMENTS TO QUARANTINE REGULATIONS, APPROVED FEBRUARY 24, 1893.

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
Washington, D. C., June 6, 1893.

To the officers of the Treasury Department,
consular officers, and others concerned:

Vessels from foreign ports bound for the United States must procure from the United States consul or medical officer a certificate of visa of the bill of health at all intermediate ports or ports of call. The following form for visa of bill of health is hereby prescribed:

CONSULAR VISA OF BILL OF HEALTH.

Port of————.
Vessel ——— ——— bound from ——— ——— to ——— ———, U. S. A.
Sanitary condition of port: ————————.
[State diseases prevailing at port and in surrounding country.]

Number of cases and the deaths from the following-named diseases during the past two weeks:

Diseases.	Number of cases.	Number of deaths.	Remarks. [Any condition affecting public health existing in the port to be stated here.]
Yellow fever			
Asiatic cholera or cholerine			
Plague			
Smallpox			
Typhus fever			

Sanitary condition of vessel, passengers, and crew (as reported by master or surgeon), including statement of deaths and sickness on board since departure ————————

NUMBER AND SANITARY CONDITION OF PASSENGERS TAKEN ON AT THIS PORT, AND SANITARY CONDITION OF EFFECTS.

First cabin, No. ———.	Sanitary condition, ———.
Second cabin, No.———.	Do. ———.
Steerage, No. ———.	Do. ———.

I certify that with reference to the passengers, effects, and cargo taken on at this port the vessel has complied with the rules and regulations made under the act of February 15, 1893.

Given under my hand and seal this ——— day of ———, 1893.

[SEAL.]

——— ———,
United States Consul.

——— ———,
Surgeon, Marine Hospital Service.

The following form of certificate of disinfection of merchandise for the use of consular officers at interior ports, or at ports from which merchandise is shipped to another port to be there transshipped to the United States, is hereby prescribed:

FORM OF CERTIFICATE OF DISINFECTION OF MERCHANDISE.

No. ———.

CONSULATE OF THE UNITED STATES
at ——— ———.

I, ——— ———, of the United States, at ——— ———, hereby certify that the goods or merchandise mentioned and described in consular invoice No. ———, dated ——— ———, and consisting of ——— bales, barrels, boxes, or parcels of ——— ———, marked ———, shipped by ——— ———, of ——— ———, to ——— ———, of ——— ———, on vessel ——— ———, have this day been disinfected in accordance with the Treasury Quarantine Regulations of February 24, 1893, under my personal supervision.

Fee received, $2.50.

——— ———.

Given under my hand and seal this ——— day of ———, 189 .

[SEAL.]

——— ———.

RULE REGARDING NEW CUTTINGS.

New cuttings, meaning the waste from new cotton or linen cloth taken from factories, shall be considered as new merchandise, and come within the provisions of section 3, Article VII, of the Quarantine Regulations of February 24, 1893.

AMENDING SECTION IV, QUARANTINE LAWS AND REGULATIONS.

Article IV, U. S. Quarantine Laws and Regulations, dated February 24, 1893, is hereby amended after the eleventh line by substitution of the following:

The air space, ventilation, etc., must conform to the following extracts from the passenger act of 1882.

SEC. 3. That every such steamship or other vessel shall have adequate provision for affording light and air to the passenger decks and to the compartments and spaces occupied by such passengers, and with adequate means and appliances for ventilating the said compartments and spaces.

To compartments having sufficient space for fifty or more of such passengers at least two ventilators, each not less than twelve inches in diameter, shall be provided, one of which ventilators shall be inserted in the forward part of the compartment and the other in the afterpart thereof, and shall be so constructed as to ventilate the compartment; and additional ventilators shall be provided for each compartment, in the proportion of two ventilators for each additional fifty of such passengers carried or brought in the compartment.

All ventilators shall be carried at least six feet above the uppermost deck of the vessel, and shall be of the most approved form and construction. In any steamship the ventilating apparatus provided, or any method of ventilation adopted thereon, which has been approved by the proper emigration officers at the port or place from which said vessel was cleared, shall be deemed a compliance with the foregoing provisions.

* * * * * * *

In every vessel carrying or bringing such passengers there shall be at least two water-closets or privies, and an additional water-closet or privy for every one hundred male passengers on board, for the exclusive use of such male passengers, and an additional water-closet or privy for every fifty female passengers on board, for the exclusive use of the female passengers and young children on board. The aforesaid water-closets and privies shall be properly enclosed and located on each side of the vessel, and shall be separated from passengers' spaces by substantial and properly constructed partitions or bulkheads; and the water-closets and privies shall be kept and maintained in a serviceable and cleanly condition throughout the voyage.

J. G. CARLISLE, *Secretary.*

[Circular.]

QUARANTINE REGULATIONS.

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
Washington, D. C., June 15, 1893.

To officers of the Treasury Department,
consular officers, and others whom it may concern:

You are hereby informed that the quarantine regulations of the Treasury Department approved by the Secretary of the Treasury February 24, 1893, and April 4, 1893, with subsequent circular additions and amendments, supersede all circular quarantine regulations previously issued; and all quarantine circulars issued prior to the dates of approval of said regulations are hereby revoked.

Collectors of customs, in enforcing the provisions of the quarantine laws and regulations denying entry to vessels, or detaining the same, are directed to report immediately by telegraph to the Supervising Surgeon-General of the Marine-Hospital Service the reasons therefor, and other necessary information.

While the quarantine rules can not be relaxed, no unnecessary detention or delay to vessels should be caused in enforcing the same, as it is the purpose of the Department to facilitate commerce in every proper way consistent with the public safety.

J. G. CARLISLE, *Secretary.*

CIRCULAR LETTER RELATING TO INSPECTION OF IMMIGRANTS ENTERING THE UNITED STATES BY WAY OF CANADA.

TREASURY DEPARTMENT,
OFFICE OF SUPERVISING SURGEON-GENERAL M. H. S.,
Washington, D. C., July 21, 1893.

To saniiary inspectors U. S. Marine-Hospital Service on duty on the Canadian border of the United States:

Until further orders you are directed to inspect all immigrants and their baggage coming into the United States via Canada.

Immigrants that can not produce certificates showing that they have passed the quarantine station at Grosse Isle or at Quebec should be detained for such period as may be necessary. The baggage of said immigrants must be disinfected prior to admission into the United States.

The certificate of the medical superintendent of the St. Lawrence quarantine service or of the medical officer of the Marine-Hospital Service who has been permitted to witness the disinfection at Quebec will be accepted by all inspectors on the Canadian border.

Any case of suspicious sickness discovered among the immigrants must be immediately isolated and a full report made by telegraph to this Bureau.

The disinfection of infected or suspicious baggage will be by one or more of the methods described in Article V, Quarantine Regulations of April 4, 1893, a copy of which is inclosed.

You will transmit each week a report of service performed, giving date, number of immigrants examined, number detained, number of pieces of baggage disinfected, and method employed, and any special facts of importance. Should there be no transactions within the week, you will transmit a report to that effect.

You will cooperate with State and local health authorities in the enforcement of their rules, provided they do not conflict with these instructions or previous instructions issued by the Treasury Department.

While thus cooperating it is not understood that you are subject to orders from any State or local authority. Specific orders must be received from or through the Marine-Hospital Bureau.

Respectfully, yours,

WALTER WYMAN,
Supervising Surgeon-General M. H. S.

TREASURY DEPARTMENT, *July 22, 1893.*

Approved:
J. G. CARLISLE, *Secretary.*

[Circular.]

ADDITIONS TO ARTICLE I OF THE REGULATIONS FOR MARITIME QUARANTINES OF THE UNITED STATES, PROMULGATED APRIL 4, 1893.

TREASURY DEPARTMENT,
OFFICE OF THE SECRETARY,
Washington, D. C., August 29, 1893.

To the officers of the Treasury Department, quarantine officers of the United States, and others concerned:

Pursuant to the act of Congress, approved February 15, 1893, entitled "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service," and in execution of the responsibility with which this Department is charged by said act, the following regulations are hereby prescribed additional to Article I of the Regulations for the Maritime Quarantines of the United States, issued April 4, 1863:

1. BB. All vessels from domestic ports where yellow fever, cholera, typhus fever, or smallpox is prevailing.

5. In the performance of the duties imposed upon him by the act of February 15, 1893, the Supervising Surgeon-General of the Marine-Hospital Service shall, from time to time, personally or through a duly detailed officer of the Marine-Hospital Service, inspect the maritime quarantines of the United States, State and local, as well as national, for the purpose of ascertaining whether the quarantine regulations prescribed by the Secretary of the Treasury have been or are being complied with. The Supervising Surgeon-General, or the officer detailed by him as inspector, shall, at his discretion, visit any incoming vessel, or any vessel detained in quarantine, and all portions of the quarantine establishment, for the above-named purpose and with a view to certifying, if need be, that the regulations have been or are being enforced.

J. G. CARLISLE, *Secretary.*

[Circular.]

UNLABELED BAGGAGE OF STEERAGE PASSENGERS AND UNLABELED BAGGAGE OF SECOND-CABIN PASSENGERS FROM CHOLERA-INFECTED PORTS OR PLACES TO BE DISINFECTED AT THE QUARANTINE STATION FOR THE PORT OF ARRIVAL.

TREASURY DEPARTMENT,
Washington, D. C., September 19, 1893.

To quarantine officers of the United States, commissioners of immigration, collectors of customs, steamship agents, and others:

Department Circular No. 65, May 4, 1893, relating to the labeling of baggage and the issue of inspection cards to steerage and cabin passengers, provides that all baggage of steerage passengers destined for the United States shall be labeled at the port of departure, said label to bear the seal or stamp of the consulate or of the medical officer of the United States serving at the foreign port; also, that the baggage of cabin passengers from cholera-infected ports or places shall be likewise labeled. Information has been received that occasionally pieces of baggage arrive without being labeled as above required.

It is hereby directed that any piece of baggage, including hand baggage, belonging to a steerage passenger, not bearing a label as provided for in said circular, shall be disinfected by steam at the quarantine station for the port of arrival;

also, that the baggage of second-cabin passengers coming from cholera-infected ports or places, not bearing the label as provided for in said circular, shall be likewise disinfected by steam at the quarantine station for the port of arrival.

In view of the difficulty of accurately inspecting each piece of baggage while on board ship at the quarantine, commissioners of immigration and custom officers are hereby directed to scrutinize the baggage of immigrants when landed at the immigrant station, and should any piece of baggage, including hand baggage, be discovered to be without a label, as above required, they are directed to return the same to the quarantine of the port, where said baggage shall be disinfected by steam and properly labeled with a certificate to that effect before said baggage shall be allowed to pass into the United States.

CHARLES S. HAMLIN, *Acting Secretary.*

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ANNUAL REPORT

OF THE

SUPERVISING SURGEON-GENERAL

OF THE

MARINE-HOSPITAL SERVICE OF THE UNITED STATES

FOR THE

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IN TWO VOLUMES
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COMMISSION TO OBTAIN INFORMATION CONCERNING CHOLERA IN FOREIGN COUNTRIES.

A very important measure, looking to the prevention of the introduction of cholera into the United States during 1893, was the appointment of a commission consisting of Surg. Fairfax Irwin, of the Marine-Hospital Service, and Dr. Walter Kempster, for the purpose of visiting foreign ports and places, with a view to keeping the Bureau informed of the existence of cholera and the special dangers to be apprehended through immigration and importation of merchandise. These gentlemen started on their mission December, 1892, but before its completion it was necessary to relieve Surgeon Irwin, on account of the existence of cholera in Marseilles, and assign him to duty at that port. Dr. Kempster continued his investigations alone. Information from these officers was forwarded at brief intervals, either by cable or by letter, and many of their communications were published in the Abstract of Sanitary Reports. A full report of the commission, of great permanent value, is included in this volume.

MEDICAL OFFICERS AT FOREIGN PORTS.

Reports are also appended from the several medical officers detailed for duty in foreign ports. The essential facts contained in these reports were also published from time to time in the Weekly Abstracts.

As indicating the direct benefit to the United States of the presence of these officers in foreign ports, a statement is herewith transmitted from one of them, showing the results of the sanitary inspection of vessels bound for the United States, as compared with the results of want of such inspection of vessels bound for South America. The following is the statement:

U. S. Marine-Hospital Service,
Middle Atlantic District,
New York, March 4, 1894.

Sir: The appended is a brief statement of the facts in regard to the ships leaving Naples during the height of the cholera:

From the 15th of July to August 17 there were eight vessels cleared from Naples with steerage passengers; four for New York and four for South American ports. The first to leave was the *Karamania* for New York on July 15. No cholera at that time existed in Naples. The first case occurred on the night of the 16th, and the result of the bacteriological examination was not known until the afternoon of the 17th or morning of the 18th. The passengers for the *Karamania* and this ship itself were put through the routine I had established. The ship was cleaned, ventilation, etc., altered to conform with our law, closets and hospitals put in good order, water and food supply attended to, passengers inspected and vaccinated, and both their baggage and clothing searched for food. Three days after sailing, i. e., on the 18th, a death from cholera occurred, and just before reaching New York there were two more. It is not unlikely that the infection in the first case was traceable to the same source as those occurring in Naples on the 16th. I am of the opinion that but for the careful exclusion of food brought by passengers there would have been more cases on the remaining three ships for the United States. The regulations governing infected ports were rigidly enforced. In the first case, the *Massilia*, the passengers were met at the trains and conducted immediately on board; were then isolated three days and all their baggage transferred across the city unopened. All food was carefully looked into; all from persons or baggage excluded, and the baggage of a few about whose antecedents there was doubt disinfected by steam. The ship wsa warped out some distance frem tho pier every night and an inspector kept on board night and day. There being no cholera known to exist anywhere in Italy, outside of Naples, it was not thought necessary to disinfect all baggage or isolate five days. She arrived safely in New York without mishap.

The remaining two for the United States were the *Weser* and *Cashmire.* In both cases the regulations were enforced in detail. One lay about a mile and a half off shore during her five days. The other cruised at sea. In both cases an inspector was kept aboard day and night. Both escaped cholera.

The four for South America with the result in each case were as follows: The figures are not official, but are practically accurate in every respect. All were turned back by the South American authorities. *Vencenzio Florio* had about 50 deaths: *Andrea Dorio* 90 on way out, total not ascertained; *El Remo*, 84 deaths; *Carlo R.*, about 230 deaths.

To summarize, then, eight ships left Naples. The water supply was the same, the food about the same, the class of passengers identical, and their places of origin similar, in many cases identical. All four leaving without precautions became floating pesthouses. Of the four for the United States the one leaving before cholera appeared in Naples had 3 deaths. The other three were made to conform to the regulations and all escaped. In other words, every ship that left Naples had cholera except those in whose case the "infected-port" regulations were carried out; and of the five that had cholera the only one that escaped with less than 50 deaths was the one on which our "noninfected port" regulations were enforced, she having only 3 deaths en route. In addition the enforcement of the regulations compelled the abandonment of a number of others sailing for the United States. The escape of the *Massilia*, *Cashmire*, and *Weser* may be "*post*" and not "*propter hoc;*" but we certainly have the right to consider the evidence to be strongly on the side of "*propter.*" If I had it to do over again I would make them all cruise during their five days.

Very respectfully,

G. B. Young,
Assistant Surgeon, M. H. S.

Supervising Surgeon General U. S. Marine-Hospital Service,
Washington, D. C.

CHOLERA AT NEW YORK QUARANTINE.

On August 4, 1893, the health officer of the port of New York telegraphed the Bureau of the arrival of the steamship *Karamania*, August 3, from Naples, having had two deaths from cholera just before reaching port. The vessel and passengers were detained in quarantine until August 14. There were 21 cases and 3 deaths from cholera among the immigrants from this vessel.

On October 8 the steamship *Russia*, from Hamburg, arrived at the Quarantine, having had 5 suspicious deaths during the voyage. Bacteriological examination in the case of one of the immigrants who died immediately before arrival proved the case to be one of cholera. The immigrants were isolated on Hoffman Island and the ship held under observation. But one death occurred on Swinburne Island.

On the arrival of the *Karamania* an invitation was received from the quarantine officer at the port of New York for the cooperation of any member of the Marine-Hospital Service who might be sent for purposes of observation, and Passed

Assistant Surg. J. J. Kinyoun was thereupon detailed to act as inspector at the New York Quarantine, under the following letter of instruction:

TREASURY DEPARTMENT,
OFFICE OF THE SUPERVISING SURGEON-GENERAL,
MARINE-HOSPITAL SERVICE,
Washington, D. C., August 12, 1893.

SIR: Confirming the telegraphic instructions recently given to you, and in addition thereto, you are informed that you are detailed as inspector at the New York Quarantine. This duty is assigned to you in conformity with the act of Congress, approved February 15, 1893, entitled, "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service," and in conformity with the opinion of the Solicitor of the Treasury, regarding the rights and duties of the Supervising Surgeon-General of the Marine-Hospital Service, in his relation to State and local quarantines. This opinion will be found printed in the current number of the Abstract of Sanitary Reports, issued August 11. The prevalence of cholera on Swinburne Island and the repeated appearance of the same disease among the suspects on Hoffman Island, render it necessary that the greatest care should be exercised to prevent any transmission of the same to the neighboring shores or to the city of New York. It is your duty to ascertain by observation whether all the rules and regulations promulgated by the Secretary of the Treasury, copies of which are in your possession, are complied with. Furthermore, in the interests of the interstate quarantine service and the various boards of health in the interior, it is necessary that such baggage as, under the regulations, must be disinfected at the New York Quarantine and certified to by the quarantine officer of that port, should be certified to by yourself.

You are informed that the Bureau has offered to render any assistance possible to the quarantine officer in the present emergency, and you will promptly notify the Bureau if such request is made, acting immediately, if immediate action is required.

You are informed that by direction of the Secretary of the Treasury, the revenue cutter *Washington* has been placed at your disposal for the purpose of assisting you in carrying out these instructions.

You are also informed that, in case of necessity of assistance, such assistance as may be demanded by you will be furnished,

You are further directed to report daily to the Bureau, using the telegraph, if necessary, calling attention to any procedures that, in your opinion, are required as protective measures against the introduction of cholera.

You are informed that your position as inspector is not exceptional, as under regulations inspections have been made at other quarantines and a similar procedure will be adopted at any port in the United States at which a case of cholera may appear.

WALTER WYMAN,
Supervising Surgeon-General, Marine-Hospital Service.

Passed Assistant Surgeon J. J. KINYOUN,
U. S. Marine-Hospital Service,
Quarantine Station, Staten Island, New York.

CHOLERA IN JERSEY CITY.

On August 30 information was received of two suspicious deaths in Jersey City, and Surg. P. H. Bailhache and Passed Assistant Surg. J. J. Kinyoun were detailed to investigate the matter. On September 1 Dr. Kinyoun reported that his bacteriological examination in one case proved that the patient had died of true cholera.

Acting on this information and by request from the officers of the New York board of health the Supervising Surgeon-General proceeded to New York and held a conference on the evening of September 1 with the president of the New York board of health, the health commissioner of New York City, and with the representative of the secretary of the State board of health of New Jersey. Early Friday morning a conference was held between the Surgeon-General and Police Commissioner Feeny and Health Commissioner Benjamin, of Jersey City, together with the representative of the secretary of the State board of health.

It was shown at this conference that the Jersey City health authorities had already taken active measures to prevent the spread of the disease. A house-to-house inspection of the premises in the infected districts had already been instituted, together with disinfection of the infected and suspected premises. All the suspected premises were under quarantine. It was learned that the health authorities had been active during the summer, and that 5,000 nuisances had been abated since March 1 by the board.

The act of Congress approved February 15, 1893, was read at this conference, and the position of the representatives of the General Government in such a crisis was stated to be as follows:

The medical officers of the Marine-Hospital Service were, by virtue of the law, to act as inspectors to ascertain if the necessary measures for the prevention of the spread of the disease were being carried out. They would also cooperate with and aid the State and local boards in every possible manner.

The State board of health of New Jersey has supervision over the local boards, similar to that of the National Government over State and local boards. It was found that the local health authorities were active; that they had an excellent corps of sanitary policemen, but that their immediate need was for physicians experienced in matters of this kind. Their invitation, both to the State board and to the Marine-Hospital Service, to furnish aid of this character was accepted, all operations to be carried on through the agency of the local authorities. In accordance with this agreement, Surg. Preston H. Bailhache, of the United States Marine-Hospital Service, was immediately detailed by the Surgeon-General, and to assist him, Surg. H. W. Sawtelle and Assistant Surg. J. A. Nydegger.

Four physicians, whose services had been previously contracted for in the event of such an emergency, were immediately summoned from New York and placed on duty under the supervision of Surg. Bailhache. Three medical officers of the State board of health were also placed on duty, the State board of health being represented by Dr. A. Clark Hunt, State sanitary inspector. The temporary services of Dr. Bond, of the New York City board of health, an expert in practical disinfection, had been previously tendered by the said board, and the work of disinfection with a full corps of assistants and a supply of disinfecting material was immediately begun by that officer. All the necessary precautionary measures were thus provided for and an effective and harmonious organization was immediately put into operation.

On September 9, there having been no development of other cases, the medical officers of the Marine-Hospital Service on duty at Jersey City were relieved.

RELIEF FOR THE SEA ISLANDS OF SOUTH CAROLINA.

On August 27th a violent storm visited the South Atlantic coast and caused an inundation of many of the islands contiguous to the coast of South Carolina. Great apprehension was felt that on account of the large number of dead animals unburied, the occlusion of drains, and the filling of the wells with salt water, sickness of an epidemic character would break out among the survivors of the storm. Urgent appeals were made to the Government to prevent this, and after an affirmative opinion had been received from the Solicitor of the Treasury as to the legality of the expenditure, a recommendation was made and approved by the Secretary of the Treasury, in accordance with which the President allotted $5,000 of the epidemic fund for sanitary work. This was carried on under the direction of Passed Assistant Surg. George M. Magruder, whose report was published in full in the Abstract of Sanitary Reports, dated November 10, 1893.

YELLOW FEVER IN THE SOUTH IN 1893.

THE BRUNSWICK EPIDEMIC.

June 15, 1893, the American barkentine *Anita Berwind* arrived at the Brunswick, Ga., quarantine. She cleared June 19 for Conquest's wharf, on the Satilla River, Georgia, 56 miles from Brunswick, arriving there on the 20th; on the evening of which day the master took to his bed. On June 21 he was moved to Conquest's camp, a cross-tie camp 8 miles distant from the wharf, where he died June 25 of yellow fever. The vessel was immediately sent to the national quarantine station at Blackbeard Island and 25 stevedores who had been loading her were also sent there for detention and observation. Surg. H. R. Carter was immediately ordered to Conquest's camp and, assisted by Dr. W. F. Brunner, the health officer of Savannah, took every possible precaution to prevent the spread of the disease, keeping the 73 persons in the camp under a close observation, burning and boiling all the possibly infected articles and disinfecting the house wherein the patient died. Owing to the thoroughness of this work there was no development of the fever in the camp or at the wharf. The master of the vessel was said to have been feeling badly before leaving Brunswick quarantine and was known to have visited the city. This led to an inspection of the Brunswick quarantine by Surg. Carter, by which it was shown that there was gross violation, not only of the United States quarantine regulations, but of ordinary quarantine principles.

The action of the Bureau is set forth in the following letter:

TREASURY DEPARTMENT,
OFFICE OF THE SUPERVISING SURGEON-GENERAL,
MARINE-HOSPITAL SERVICE,
Washington, D. C., July 20, 1893.

SIR: I have the honor to state that on June 27 I received the following dispatch from the health officer at Savannah, Ga.:

"Master of vessel died ashore on Satilla River of yellow fever. Vessel ordered to Sapelo. No health organization. Situation needs immediate attention. Will cooperate with Carter. Let us have him. Sanitary Board expects Service to act quickly."

Acting on this dispatch, I directed Surg. Carter to proceed to Satilla River and take all necessary precautions to prevent the spread of the disease. A report has been received from Surg. Carter detailing his action. It is only necessary here to state that he was occupied in this work about two weeks, and by adopting most vigorous sanitary measures it is believed that any further spread of the disease has been prevented. Surg. Carter then, under the direction of this Bureau, investigated the quarantine service at Brunswick, Ga., at which port the vessel that brought the yellow-fever infection was admitted to entry.

His report is herewith inclosed. This report shows most conclusively that the quarantine regulations promulgated by the Secretary of the Treasury were not enforced with regard to the bark *Anita Berwind*, on which vessel the captain, who died of yellow fever, was taken sick, and that the quarantine authorities at Brunswick have constantly during this season failed to comply with the said regulations. On account of this laxity, which still threatens to bring disaster, I am satisfied that the National Government should assume control of this quarantine in accordance with section 3 of the act of February 15, 1893, which states, "If the State or municipal authorities shall fail or refuse to enforce said rules and regulations, the President shall execute and enforce the same, and adopt such measures as in his judgment shall be necessary to prevent the introduction and spread of such disease, and may detail or appoint officers for that purpose."

I will add that the State of Georgia has no State board of health, and that the quarantine at Brunswick is of a local character altogether. I have. therefore, to recommend that Assistant Surg. John W. Branham, U. S. Marine-Hospital Service, be detailed immediately by the President to enforce the rules and regulations which have been duly promulgated by the Secretary of the Treasury. Assistant Surg. Branham has already had quarantine experience, is a native of Georgia, and is considered well qualified to perform this duty.

I have the honor to remain, very respectfully, yours,

WALTER WYMAN,
Supervising Surgeon-General, M. H. S.

The SECRETARY OF THE TREASURY.

TREASURY DEPARTMENT.

Approved:
J. G. CARLISLE, *Secretary.*

EXECUTIVE MANSION.

Approved:
GROVER CLEVELAND.

Dr. Branham took charge of the quarantine July 31 and died of yellow fever August 20. Under a misapprehension of the nature of his disease he had been removed by the health officer of Brunswick from the quarantine into the city for treatment. From the reports which follow it will be seen that there were a number of infected localities in Brunswick at the time, and the evidence does not warrant the assumption that Dr. Branham was the cause of the city's infection. From Surg. Murray's report it appears that he may possibly have contracted the disease from the ballast pile in Brunswick, but at the same time the colored laborers engaged in discharging ballast at the quarantine (21 in all) had free access to the city, and it was through them or other media, and not through Dr. Branham, that the disease was probably introduced and generally disseminated as early as or prior to August 5. Dr. Branham was in the city on the 10th of August; in the afternoon returned to quarantine on his way to the station; was seized with a chill, which was followed the next day by a fever; was removed on the 11th to the city, and on the 12th was reported as suffering from yellow fever.

Dr. Branham did not see a single yellow-fever case, nor did he inspect an infected vessel. It is remarkable that yellow fever prevailed extensively among the colored people, and the assumption by Surg. Murray that the disease was introduced by the colored ballast laborers, who immediately after performing their duties in discharging ballast of infected ships freely visited the city, is most probably the correct explanation of the cause of the epidemic.

Examination of the mortuary records of Brunswick indicated subsequently that the disease had prevailed in the city some weeks before the Branham case, and it has been established beyond question that the same disease prevailed in the same city in October, 1890, both by an examination of the mortuary records of that time and through the well-authenticated testimony of one of the physicians of Brunswick, who admitted that he had been treating patients with yellow fever, and that only a frost would prevent its becoming epidemic, which was fortunately the case.

Surg. W. H. H. Hutton was immediately ordered from Norfolk and Surg. H. R. Carter from Pensacola, the former arriving at Brunswick August 14, the latter on the morning of the 15th.

As will be seen by the reports, vigorous disinfection of the first infected premises, depopulation of limited areas and guarding the same, was carried on with apparently favorable results. August 17, Sanitary Inspector John Guiteras arrived, to assist in the preventive measures. On the 8th of September, there having been three deaths, and fifteen days having expired since the last death, on recommendation of Surg. Hutton, the report of Sanitary Inspector Guiteras that he had "finished an examination of the cases of fever existing at present and none are suspicious," and report of Passed Assistant Surg. G. M. Magruder, stating, "there seems to be no cause existing for continuing the quarantine," orders were issued to raise the quarantine.

In the meantime all arrangements had been made for the rapid construction of a detention camp at Waynesville, Ga., 25 miles distant, under the direction of Surg. Hutton, which was completed, ready for occupancy, by September 2. On September 10 Surg. Hutton was obliged to be relieved on account of physical debility.

On September 13 two additional deaths from yellow fever were reported by Sanitary Inspector Guiteras, in one of which a certificate of death from consumption had been given. Instructions were immediately telegraphed to employ necessary help for quarantining and disinfecting the infected localities. Passed Assistant Surg. H. D. Geddings arrived under orders September 16. Surg. R. D. Murray was ordered from Key West Quarantine (Dry Tortugas), arriving September 18, and reported a strict cordon established. The Postmaster-General was requested to have the mails from Brunswick disinfected. Train inspectors were appointed at Jesup and Waycross. Passed Assistant Surg. Geddings was ordered to assume command of the detention camp at Waynesville. The railway companies were instructed to sell no tickets south of Atlanta, and on the 16th directions were given to open the camp immediately and make it the only outlet from Brunswick. On the 17th the disease was declared epidemic by the Brunswick board of health. On the 18th Dr. Paul Von Seydewitz, of New Orleans, was ordered to Atlanta to consult with railway authorities and to prevent Brunswick refugees from going south, particularly to Florida. The camp was officially opened September 18, under the immediate command of Passed Assistant Surg. Geddings, Surg. Murray being the officer in command of all measures in the infected district. At that time there were 20 known cases in various portions of the city, 11 being reported in one day. In addition to the land cordon, a guard of 6 men with three boats as a day and night patrol was established on the Cumberland River to prevent refugees going to Florida by water. Guards were also stationed with boats at convenient points on the mainland and on the adjacent islands to intercept refugees going north by water, the cordon thus being made complete both on land and water.

A number of physicians of reputation, who had themselves had yellow fever and experience in treating the disease, were immediately engaged by the Bureau and sent to Brunswick. The details connected with the management of the epidemic will all be found in the appended reports of the several officers; but in general it may be stated that Surg. Murray, with a full corps of accomplished surgeons and an experienced hospital steward, was in command within the city, and that his efforts to prevent the contagion reaching other portions of the country were supplemented by the assistance of the revenue cutters at Beaufort and Savannah, carrying medical officers of the Marine-Hospital Service, patrolling the waterways north of Brunswick to inspect the guards stationed therein, and in one instance capturing a boat load of refugees and carrying them to the neighboring national quarantine station at Blackbeard Island to undergo a period of detention.

October 4, Surg. H. R. Carter, who had been temporarily transferred for duty in Washington, was ordered to Way Cross with the triple object of investigating rumors of yellow fever prevailing in various localities to which Brunswick refugees had resorted; to intercept any refugees who might escape through the cordon lines, and to establish a system of train inspection which would permit the railroads to continue traffic without interruption from the sanitary authorities of the various small cities alarmed at the possibility of infected persons coming within their borders. Surg. Carter was assisted by Assistant Surg. J. A. Nydegger, Marine-Hospital Service, and a corps of sanitary inspectors.

This service on the outside of the infected area was a new feature in epidemic management and proved very efficacious. It will be seen from Surg. Carter's report that fourteen places were inspected by him in which it was feared yellow fever existed, and his authoritative statement relieved the communities (with one exception, Hazelhurst) of the suspicion that rested upon them. Apprehension was also relieved by Surg. Carter's action in compelling Brunswick refugees to remove from towns adjacent to the railroads to more remote and isolated localities.

The epidemic was declared at an end November 25. The detention camp was closed November 30. The total number of cases of yellow fever in Brunswick during the epidemic was 1,070, with 46 deaths. The disease prevailed at no other locality excepting at Jesup, which, as will be seen by Surg. Murray's report, became infected before the disease was declared epidemic in Brunswick.

POST EPIDEMIC DISINFECTION.

As soon as the epidemic was declared at an end a thorough disinfection of infected houses was begun and pushed to completion. The disinfecting car which had been in use at the detention camp was transported to Jesup and a thorough disinfection of houses, bedding, etc., was conducted personally by Surg. H. R. Carter. The car was then removed to Brunswick and the same procedures were conducted by Surgeons Murray and Carter.

Appended are the following reports: (*a*) Report of Surg. W. H. H. Hutton, who was first in command at Brunswick after the announcement of the illness of Dr. Branham, but who was relieved by reason of severe illness September 10. (*b*) Reports by Surg. Murray—first, on the management of the epidemic in Brunswick; second, on local relief furnished; third, on the method of introduction of the disease; fourth, on the yellow fever at Jesup; fifth, on the yellow fever at South End, St. Simons Island; sixth, on commerce and labor. (*c*) Report of Passed Assistant Surg. H. D. Geddings, in command of detention camp. (*d*) Report of Surg. H. R. Carter upon train-inspection service. (*e*) Necropsy report by Surg. Murray.

Reported Yellow Fever at Pensacola, Fla.

August 9 information was received from the president of the board of health of Escambia County, Fla., that there had been two deaths from yellow fever in Pensacola.

After a consultation held in Washington with representatives from the city of Pensacola, the Secretary and Surgeon-General of the Navy, the Secretary of War, and the Surgeon-General of the Army (the Navy being interested by reason of the close proximity of the naval reservation and the Army by reason of the proximity of Fort Barrancas), Surg. Murray, Surg. Carter, and Passed Assistant Surg. Magruder were immediately ordered, August 10, to Pensacola, to assist in the preventive measures in that city and to protect the naval reservations. A cordon was established by Surg. Carter around the naval reservation. Marine-

Hospital officers were ordered to act as inspectors and to give aid to the State health officer, Dr. J. Y. Porter, who arrived on the 11th, to assume supervision of affairs. On request of State Health Officer Porter the cordon was removed August 18, there having been no further development of the disease.

August 18 an announcement was signed by J. Y. Porter, State health officer; Surg. Murray, Passed Assistant Surg. Magruder, and Dr. Robert W. Hargis, president Escambia County board of health, that after a thorough and careful inspection of the city of Pensacola, they had failed to find the existence of any infectious disease whatever.

REPORTED YELLOW FEVER AT TAMPA, FLA.

On August 30 a case of yellow fever was reported on the dock at Port Tampa, and August 31 Surg. Murray was ordered to establish a cordon. He reported that the patient was isolated in the dock office; that there was no need of a camp; that Port Tampa city and the Port Tampa docks were quarantined by an armed patrol.

On September 2 Dr. J. Y. Porter, State health officer, reported the suspicious case reported on the 29th to be a mistake, and Surg. Murray reported "restrictions removed."

Following are the regulations prepared in the Marine-Hospital Bureau and promulgated by the Secretary of the Treasury to prevent the spread of yellow fever:

UNITED STATES QUARANTINE RULES TO BE OBSERVED IN PLACES INFECTED WITH YELLOW FEVER.

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
Washington, D. C., August 12, 1893.

To Medical Officers of the Marine-Hospital Service, Quarantine Officers in the United States, and others concerned:

Pursuant to the act of February 15, 1893, entitled "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service," the following regulations have been made thereunder and are hereby promulgated according to the terms of the act:

1. All persons affected with yellow fever, or who are believed to have been exposed to the infection, will be isolated under observation until free from infection and all their effects properly disinfected. Communication with infected places will not be allowed except for the necessary conveyance of supplies, etc., which must be under the supervision of a duly qualified medical sanitary inspector.

2. The localities contiguous to those infected and infected localities, so far as it may be safely done, should be depopulated as rapidly and as completely as possible; persons from noninfected localities, and who have not been exposed, leaving without detention; those who have been exposed or who come from infected localities, being required to undergo a period of detention of ten days from date of last exposure in camps of probation. The clothing or anything capable of conveying infection shall not be allowed to leave the infected locality without disinfection.

3. Camps of probation shall be inspected twice daily or oftener, and the suspects should be conveniently segregrated in groups. A hospital sufficiently isolated shall be provided for each probation camp.

4. When practicable, camps of detention should be provided for those who require it.

5. Buildings in which cases of yellow fever have occurred and localities believed to be infected must be disinfected as thoroughly as possible.

6. As soon as the disease shall have been declared epidemic the railway trains carrying persons who may be allowed to depart from a city or place infected with yellow fever shall be under medical supervision. A medical sanitary inspector

should accompany each train when practicable, and enforce prompt isolation of any person who may be attacked with the disease, and report the same immediately to the proper health authorities. When, in the opinion of the proper health authorities, it is necessary, the railroad companies should be required to attach an extra car for hospital purposes to each train carrying persons from an infected place, which may be side tracked at some safe and convenient locality on the road.

CHARLES S. HAMLIN,
Acting Secretary.

REPORT OF SURG. W. H. H. HUTTON ON THE OUTBREAK OF YELLOW FEVER AT BRUNSWICK, CONSTRUCTION OF DETENTION CAMP, AND CAUSE OF THE INFECTION.

SIR: I have the honor to submit the following report relative to the recent epidemic of yellow fever in Brunswick, Ga., in so far as my official connection therewith was concerned.

In obedience to Bureau telegram of August 12, 1893, directing me to proceed immediately to Brunswick, I arrived at that port on the evening of August 14, 1893. Soon after my arrival I visited Assistant Surg. J. W. Branham, Marine-Hospital Service, who had been reported as suffering from yellow fever at the house of his cousin, Dr. Branham, located about half a mile northeasterly from the business center of the city. By order of the city board of health this house had been under quarantine about forty-eight hours, and in the house, and restricted thereto, were Drs. Dunwoody, Branham, a nurse, and a cook, attending the sick patient.

I found Assistant Surg. Branham very ill. He had been recently transferred to Brunswick, and placed in charge of the local quarantine at that port, located on the river about 3 miles below the city. He had not confined himself to the quarantine station, but visited the city three or four times during the ten days or two week he had been in command. (Am not certain as to date he took charge of station.) On the 10th of August he was in the city and witnessed a game of baseball. Later in the afternoon he returned to the quarantine station on a steamer plying between Brunswick and St. Simons and Jekyl islands. He was seized with a violent chill on the steamer just before debarking. The chill was followed by a raging fever, with which, he told me, he suffered also excruciating headache and lumbar pains. Next morning he called by telephone for Dr. Dunwoody. The latter proceeded at once to the quarantine station, and, deciding that Assistant Surg. Branham was suffering from malarial remittent fever, removed him to the city. On the 12th Dr. Dunwoody reported to the Bureau that Dr. Branham had yellow fever. Surg. Carter arrived on the morning of August 15, and soon thereafter he, I, and several of the profession of Brunswick visited the patient and thoroughly examined him. At noon we met the city board of health, and for three hours discussed the case in all its aspects, Carter and myself maintaining that the "most probable diagnosis" was yellow fever, medical and lay members of the board of health insisting that all the symptoms pointed toward the many forms of malarial fever prevalent at the South Atlantic and Gulf coasts. Finding a majority of opinions were against Carter and myself, Carter suggested an adjournment until 8 p. m., and that in the meantime Dr. Hazelhurst, a local physician familiar with yellow fever, and Dr. Le Garé, of New Orleans, a visitor at Brunswick, also familiar with yellow fever (and whose views, clearly expressed, tended toward the malarial hypothesis of the case, but would not be absolute without an inspection), be allowed to visit and examine Dr. Branham and report at the adjourned meeting. At 8 p. m. the board again met. Drs. Hazelhurst and Le Garé reported they had carefully examined the patient and felt it their duty to confirm the diagnosis of Surgs. Carter and Hutton; and accordingly the board of health announced the presence of yellow fever in Brunswick. As the city was financially embarrassed in consequence of the failure of three of their banks a few months previously, Carter and myself, as representatives of the General Government, were requested and authorized to take charge of the matter and do everything possible to control the infection.

At this time the consensus of opinion was that Assistant Surg. Branham had contracted the fever at the quarantine station, and that there was not then, nor had there been previously, any other cases of the fever in the city. Besides, apparently for the first time in the history of yellow fever in a populous city, a diagnosis of such had been made before one or more deaths from the infection had occurred and been confirmed by an autopsy.

Accordingly, with the foregoing knowledge before us, Dr. Carter and myself agreed that the matter was worthy of our utmost efforts to confine the infection to its then only known focus, and if possible to "stamp it out." With this end in view Dr. Carter, who is not immune, volunteered to attend the sick officer, with Dr. Hazelhurst as assistant, and two immune nurses. It was decided Drs. Dunwoody and Branham and the nurse then in attendance should be disinfected and sent at once to the South Atlantic quarantine station, inasmuch as having been exposed to the infection, and being nonimmune, it were proper they should develop the disease, if such should prove to be the case, away from the city.

Whilst Dr. Carter was attending to the foregoing, accompanied by Dr. J. L. Horsey, assistant health officer of the State of Florida, I visited every inhabited house in the block in which the Branham house was situated, and the four contiguous blocks, and informed the people thereof that, while every man's home was his castle, and I had no authority to order them out, yet on the following morning I would extend a cordon around the entire five blocks, after which it would be impossible for them to get out of the quarantine district till further orders. Accordingly, this district depopulated itself at once.

At the same time Surg. Carter and Dr. Hazelhurst, with immune nurses and cook, took charge of the sick officer, and Drs. Dunwoody and Branham and the nonimmune nurse were disinfected, put aboard a tug, and sent to the South Atlantic quarantine station to undergo sufficient detention and observation to determine whether or not they became infected during their four days' enforced confinement with the sick patient.

At the same time I proceeded personally to disinfect the infected, or supposed infected neighborhood. All débris under and around the Branham house and three contiguous houses and outbuildings was collected and burned; all the underpinning underneath these houses, cesspools, water-closets, stables, and grounds drenched with solution of $HgCl_2$, 1-600, combined with HCl, about 2,000 gallons being used in the three days I carried on this work, with the aid of three colored men. The streets surrounding the Branham block were drenched from fence to fence with a strong solution of crude carbolic acid and Fe_2SO_4.

August 20 Assistant Surg. Branham died at 5 p. m., after a sickness of ten days, and was buried with every precaution possible, and preparations made for the thorough disinfection of the interior of the Branham house, on the presumption that, so far, the case of the dead officer was the only case in the city, and still under the belief that he had contracted the disease at the quarantine station.

There had been daily meetings of the board of health since the 15th, and so far nothing to the contrary had been reported. Early on the morning of the 21st Dr. John Guitéras, of the University of Pennsylvania, who had been appointed sanitary inspector, and ordered by yourself to Brunswick as clinical expert, was taken by Dr. Hugh Burford to see a sick man by the name of Harris, lying at the Presbyterian parsonage, two blocks from the Branham house. Harris had been living in Oak Park, three-quarters of a mile northeast from the Branham house;

was feeling unwell on the evening of the 19th, and instead of going to his home stopped at the parsonage, the minister and family having left the city. Dr. Guitéras diagnosed the case as one of yellow fever. We decided still to continue our efforts to control the infection. Accordingly, the sick man was moved to the Branham house, inside of the cordon, the brother of Harris, who was nursing him, sent at once to the South Atlantic quarantine, and the parsonage disinfected.

With the announcement officially of this second known case of yellow fever in the city, his honor the mayor of this city issued a proclamation advising everybody if possible to leave. As we knew of only the two cases of known yellow fever, we did not think it necessary as yet to prevent the people leaving. About this time Dr. Guitéras, who had for several days been examining the mortuary records of the city for some time past, had arrived at the conclusion that the infection had existed in the city for a month or more prior to the case of Assistant Surg. Branham, but his evidence was not sufficiently pronounced to be absolutely certain of it, but that he was positive yellow fever was prevalent in Brunswick in October, 1890, but was kept concealed from the country at large. Of the latter opinion I shall furnish evidence later on.

With the suspicions of Dr. Guitéras, and the fact that no known connection existed between the case of Assistant Surg. Branham and that of Harris, the idea that Branham contracted the disease at the quarantine station was negatived, and it was assumed that he had been infected in the city and that the city was infected. Such being the case, the probabilities were that the disease would become epidemic, and preparation for properly caring for the people of the infected city and preventing the spread thereof should be made at once. Accordingly, I went out the Brunswick and Western Railroad 30 miles to inform myself of the topography of the country, with a view of selecting a site for a camp of probation similar to that of Camp Perry in 1888. On my return that evening, your telegram of the 21st relative to the demands of Augusta and Savannah for the establishment of a detention camp was received, and on the morning of the 22d, with Col. Geo. W. Haines, superintendent of the Brunswick and Western Railroad, Dr. Guitéras, Surg. Carter, and Dr. Burford, we went out and selected such camp near Waynesville, 25 miles northwest of Brunswick—the most salubrious location convenient to railroads in that region. Upon our return to Brunswick the third case of known yellow fever, that of the Cox child, was discovered. Immediately, on the nature of the case being made known, and before isolation could be perfected, the mother fled with the child 5½ miles into the country. Surg. Carter pursued, captured, isolated, and placed guard over them late that evening. This case developed over a mile northwest from either the Branham or Harris case, and tended strongly to confirm the growing opinion that the city was infected independently of the Branham case. I therefore issued an order to the railroad officials prohibiting them from carrying any passengers or baggage out of Brunswick for any point south of Atlanta until further orders from the Government. The mail steamer for South Brunswick and St. Simons Island was prohibited from landing at those points, mails to be delivered by small boats. Inspectors at Jesup, Way Cross, and South Brunswick were instructed to inspect all trains, passengers, and freight arriving at those points from Brunswick, or points between Brunswick and Jesup, Way Cross, etc., and see that no persons or baggage from Brunswick, and points between Brunswick, Jesup, etc., were allowed to proceed beyond the inspection stations in any direction unless they had certificates, tickets, and baggage checks for Atlanta or north of Atlanta. This order was as stringent as it was possible to make it, and was rigidly enforced. My reason for including in the restriction people in the country near Brunswick was that it was full of refugees from Brunswick. Some hundreds of Brunswick people had taken refuge at and near Waynesville, and a week after the issuance of the restrictive order I had Dr. Guitéras visit Waynesville and make a house-to-house inspection, with the result of finding all the people in good health. After the order had been in force ten days I began to issue pratique to all those people who had been out of Brunswick ten days or more.

The construction of the camp near Waynesville had been placed in charge of Col. Geo. W. Haines, superintendent of the Brunswick and Western Railroad, and Civil Engineer Fitzsimons, with instructions to push the work with all possible dispatch. In ten days eleven buildings, depot and platform, railroad siding, kitchen, two dining rooms, commissary, guardhouse, quartermaster's building, headquarters, telegraph office, hospital, and medical attendants' quarters were completed, with shingle roofs, windows, panel doors, and dressed flooring; grounds cleaned up of trees and débris, six driven wells put down, furnishing an ample supply of good water; a number of portable water-closets constructed; one hundred 12 by 14 feet tent floors built, and ten dining tables, 3½ by 20 feet, completed. Under Surg. Carter's supervision a baggage car had been lined, made steam tight, fitted with racks, steam pipes, connected with a powerful locomotive, steam supplied the compartments through 1½-inch pipes at a pressure of 165 pounds, with the result that a thermometer inserted through the chimney vent on top of the baggage car registered 101° C. in four minutes, a result eminently satisfactory to Surg. Carter and myself; more so from the fact that in my report on Camp Perry, in 1888, I had recommended as strongly as possible the construction of steam disinfecting cars, stocking them with nonperishable camp equipage, etc., and stationing them at points accessible to places liable to yellow fever, thus having the appliances at hand for immediate action. As it is, officers detailed to handle people and places developing yellow fever are obliged to exercise their wits in utilizing the best means at hand, which, though crude, under the genius of such an inventive mind as that of Surg. Carter prove effective. Before the buildings of the camp were completed you had shipped and delivered to us 200 wall tents, 12 by 14 feet, 1,000 blankets, 500 wire mattresses, cots, Winchester rifles, 200 pillows, 500 sheets and pillowcases, etc. Passed Assistant Surg. Magruder had purchased ranges, kitchen and table furniture and ware, so that by September 2 the camp was so far completed that the railroad construction force was dismissed, the camp being in condition for immediate use, if necessary, immensely superior to Camp Perry in 1888, it being our object to avoid the severe criticisms cast upon Camp Perry during the first month of its occupancy.

But with the case of the Cox child, discovered August 23, there seemed to be a total cessation of the fever. We depended upon the reports of the local physicians of suspicious cases. I suggested to the board of health August 26 that a house-to-house inspection be made on the following Monday, but I was assured by the board of health that such action was unnecessary; that it would tend to increase the nervousness of the people remaining in the city; that, in addition to the physicians, all the ministers and members of the relief corps were in touch and reporting all cases of sickness coming under their notice.

I had noticed, however, that while Drs. Hugh and R. E. L. Burford frequently carried Dr. Guitéras to see their cases of sickness, two other physicians were not availing themselves of Dr. Guitéras's or Dr. Faget's services as expert yellow-fever clinicians. I was suspicious of them, so much so that I had Dr. Guitéras and Surg. Carter sound them as to their actions. Guitéras stated that one "reported no cases because he had no cases of any kind to report;" no practice, being out of the city from 3 or 4 p. m. until 9 or 10 o'clock next day. Carter reported he believed the other to be frank in the matter. In Drs. Hugh and R. E. L. Burford I had every confidence possible. Accordingly we waited and watched. No case or suspicious cases being reported from day to day, the outlook seemed favorable for the complete cessation or control of the disease.

On the morning of September 7 I was seized with a violent vertigo, due to the formation of numerous small tumors in the right middle ear, the drum membrane of which had been destroyed in the battle of Shiloh, April 7, 1862. The vertigo recurred at frequent intervals, the initial symptoms of which would be an explosion in the head, followed by excessive giddiness and nausea, vomiting, etc.

On the evening of September 7 Dr. Guitéras telegraphed you, "Since the case of the Cox child there have been no cases of yellow fever in Brunswick. I have finished to-day an examination of cases of fever at present existing and none are suspicious." In which opinion all of us, with the best information obtainable, concurred. As full fifteen days had elapsed since the development of the case of the Cox child, who had immediately been removed to the country several miles and had recovered there, upon recommendation of September 7, you authorized the removal of the quarantine on the 8th.

On the 10th September, my sickness completely unfitting me for any duty, you kindly ordered me sent home in care of Dr. Faget. Surg. Carter had been ordered to Washington September 1st, and Passed Assistant Surg. Magruder to take command of relief of the storm sufferers on the sea islands on South Carolina and Georgia coasts, thus leaving Dr. Guitéras temporarily in charge of affairs in Brunswick.

Thus far our efforts to control the infection at Brunswick had been carried out under strict military ethics. It was attacked *in situ* with all the best destructive means at our command except annihilation of the city. At the same time, in view of the possibility of our efforts proving futile, arrangements were made to place the city in a state of siege and starve it out.

The preparations for future contingencies were continued for the reasons stated in my report of August 27, viz: "I hope it is under control, but anyone who has seen the vagaries of the fever will not hazard his reputation by prognosticating anything about it, as it has two or three months yet to exhibit its unaccountable actions."

Yellow fever is a disease propagated by the implantation of morbific matter, the nature of which is as yet unknown, in places where heat, moisture, and filth abound. Once the yellow-fever poison is implanted in places having these three factors, its growth, naturally slow, is accelerated or retarded in proportion to the amount of filth present. Brunswick was in a fairly good sanitary condition, hence the slow development of the poison there. My observations of the "vagaries" of yellow-fever poison for twenty-eight years past has been that it requires from two to six weeks, sometimes more, for it to manifest itself with sufficient power to be pronounced epidemic. Again, when the yellow-fever poison is once implanted in places having the three foregoing factors I know of no instance where it has been "stamped out."

It will "run its course" of three to four months or until heavy frosts have prevailed in the infected places. It is essentially a disease of crowded communities. It can not be propagated 5 miles distant from infected towns or communities. If any cases occur outside of towns or cities it is because such cases have been infected in crowded communities. As I have said, the three factors for the propagation of the yellow-fever poison are "heat, moisture, and filth." By filth I mean human and animal excreta and matter. Decaying vegetable matter, the cause of malarial fever in its protean forms, plays no part in the propagation of yellow fever. Hence, twenty years ago, in my "inaugural thesis," with yellow fever as my subject, I took the ground that if our Southern cities were put in such sanitary condition as to thoroughly remove and destroy all animal matter from their midst epidemics would be unknown. Time has confirmed that opinion. Indeed, so strong has it become that I would not hesitate to implant the yellow-fever poison in our northern cities, or Memphis, which has several times been devastated by yellow fever, without fear of its becoming epidemic. Therefore, while I regretted it very much, I was not surprised, within twenty-four hours after my arrival home, and full twenty days after the discovery of the Cox case, that Dr. Guitéras should report a death in the practice of one of the two physicians above mentioned the cause of which had been certified to as "consumption," but who found the "consumptive" to be a well-nourished youth, whose skin was as yellow as a lemon, etc.

As I have stated heretofore, in examining and tabulating the mortuary records of Brunswick, Dr. Guitéras had arrived at the conclusion that yellow fever had existed in that city for a month or more before the discovery of the Branham case. This brings us to the question as to how the yellow-fever poison entered Brunswick, and incidentally as to whether Assistant Surg. Branham, the first known and acknowledged case, contracted the fever at the quarantine or in the city. If Dr. Branham had confined himself to the quarantine station, or if the mistake had not been made of bringing a man violently ill, with all the initial symptoms of yellow fever, directly into the heart of the city, the problem would be easy, but Dr. Branham stopped in the city a few days before taking command of the quarantine station, and during the ten days or two weeks he was in command of the quarantine station he visited the city several times, spending the larger portion of the day there. During the short time Dr. Branham was in command of the station it does not appear that he had any vessels to handle from the yellow-fever zone or infected ports. If such was the case, I may say that I have yet to learn of a quarantine station anywhere ever being infected with yellow-fever poison due to the absence of the third factor—filth. Notwithstanding the fact that the quarantine regulations promulgated last March and concurred in by the health and quarantine authorities of the Southern States and cities, it is susceptible of proof that the management of the Brunswick quarantine station was absolutely inefficient.

The quarantine physician visited the station only when a vessel arrived in port, boarded, inspected, and directed the disinfection of vessels requiring it, in his opinion, and returned to the city and engaged in private practice until again called by telephone to inspect another vessel; thus leaving such important work as disinfecting vessels from the yellow-fever zone to ignorant employés. For I insist that if an infected or suspected vessel is not made absolutely mechanically clean and disinfected to the fullest extent and power from galley to keel and then held in quarantine for sufficient time *after* the work is fully completed to demonstrate that none of the people aboard the vessel or the quarantine employés have been infected in the act of disinfecting such vessel, the work will be a delusion and a snare. Better be done not at all, for then people reposing trust in such ineffective work will be on their guard and know what to do. Now, the records at Brunswick show that between May 1 and July 1, 1893, fifteen vessels arrived at that port requiring by the regulations disinfection; of these, eleven received insufficient detention, i. e., five days, including, I understand, the time required for unballasting and presumable disinfection. Of the eleven vessels five were from Havana, some of which had ballast of street débris from Havana. The most notable example of the utter inefficiency of the Brunswick quarantine is shown in the case of the *Anita Berwind*, Capt. Biddle, from Havana. This vessel came to the quarantine wharf for disinfection about 3.30 p. m. June 15, and was cleared and proceeded up the Satilla River early on the morning of June 19, 1893. Capt. Biddle stopped at the Ocean House, Brunswick, from the morning of June 17 to June 19, 1893. He was quite sick with fever on the 17th; on the 19th he proceeded up the Satilla River to Conquest's Camp, where he died of yellow fever six days thereafter. Did Capt. Biddle have yellow fever while at the Ocean House? I believe so. I have known instances where the initial symptoms of yellow fever simulated those of intermitttent fever, i. e., a complete remission of the fever, and then, twelve to twenty-four hours thereafter renewed exacerbation. In my own attack, in October, 1873, my initial chill, headache, etc., came on late Saturday night, with complete remission Sunday and Sunday night, and I did not "give up" till noon Monday. This is an exception to the rule.

It is susceptible of proof that a number of the other fifteen vessels above alluded to had equally short detentions.

Again, it is stated that some of the laundry work of the Brunswick quarantine employés was constantly sent to the city to be laundered.

Such, briefly, are the facts regarding the management of the Brunswick quarantine immediately prior to the late epidemic in that city, and I use the strong terms applied thereto advisedly, and with this condition of affairs going on there of what avail is it if the National Quarantine Stations, or other local quarantines, are conducted with all the vigilance and skill of such eminent sanitarians as Rutherford, of Texas; Holt, Jones, and Wilkinson, of Louisiana; Cochran and Scales, of Alabama; Porter, of Florida; Brunner, of Savannah, and Horlbeck, of Charleston. Their links in the chain may be forged of Harveyized steel, but the link at Brunswick has not even the strength of a rope of sand. "The strength of a chain is only equal to that of the weakest link," is an axiom that obtains here.

The foregoing facts tend strongly to confirm the opinion of Sanitary Inspector Guitéras, derived from a critical examination of the mortuary records of Brunswick, that yellow fever existed in that city prior to the case of Assistant Surg. Branham, and negatives the opinion that he became infected at the quarantine station. After his arrival at Brunswick, and after tabulating the mortuary records of Brunswick for several years past, Dr. Guitéras asserted that he had suspicions that the yellow fever had existed in Brunswick for some weeks prior to the Branham case. He was emphatic, however, in maintaining that the yellow fever prevailed in Brunswick in October, 1890, which was kept concealed, and without any special effort I ascertained the following facts in the matter:

About September 1, a Norwegian captain and wife came up from St. Simons Island for a health certificate to enable them to go North. They informed me that they had sailed in the yellow fever zone fifteen years, and had seen yellow fever. That in October, 1890, they were in Brunswick, and were both seriously sick with fever, which they told the attending physician they were certain was yellow fever, but the physician discredited it. Mr. Nightingale, a citizen of Brunswick, told me he lost two daughters from fever in October, 1890, which he was satisfied was yellow fever, but the physician pronounced it hemorrhagic malarial fever.

At the time you and I were in Waycross, Ga., October last, Col. Geo. W. Haines sent for me, after you and I had called upon him, on an important matter. He then informed me that, what I did not probably know, was that yellow fever was very prevalent in Brunswick in the fall of 1890. That Dr. Butts, his railroad surgeon, told him that yellow fever was almost epidemic there, and "if the Lord did not send a frost soon it would be impossible for them longer to conceal it."

This condition of sanitary affairs at Brunswick for several years past is probably due in a measure to indifference born of long exemption from yellow fever, but mainly to commercial rivalry. Brunswick is excessively jealous of the commercial importance of Savannah. They fear Savannah is endeavoring to secure the cotton, lumber, and naval-stores trade of Brunswick—hence Brunswick has placed as little strictures on vessels as possible, even to unballasting and disinfecting vessels from Havana, with street débris as ballast, within twenty-four hours.

The best remedy for this lax work is for the General Government to appoint one or more inspectors, endowed with "firmness of purpose, devotion to duty, and common sense," characteristics which Surg. Carter states are the necessary qualifications for a good quarantine officer, and have every national and local quarantine thoroughly inspected and investigated by them every thirty or sixty days during the quarantine season, with full authority to instantly remedy any defects or dereliction of duty in the premises.

As to how the yellow fever reached Jesup I do not know, nor am I familiar with the management of the yellow fever at Brunswick and Jesup after I was relieved September 10. This properly belongs to Surg. Murray, Surg. Carter, and Passed Assistant Surg. Geddings.

In closing this report I can not but express my highest esteem and appreciation of the services of Dr. John Guitéras, Dr. Chas. Faget, Surg. Carter, Passed Assistant Surgs. Magruder and Geddings. Taken altogether I doubt if it would be possible to get together a similar corps combining a more scientific or practical knowledge of and management of yellow fever. The thanks and esteem of the corps is also due the Surgeon General of the Marine-Hospital Service for his prompt action in taking in hand the matter of preventing the spread of the yellow fever from Brunswick, and approval of the means taken by the corps in carrying it out.

Respectfully submitted.

W. H. H. HUTTON,
Surgeon Marine-Hospital Service.

SUPERVISING SURGEON-GENERAL U. S. MARINE-HOSPITAL SERVICE,
Washington, D. C.

REPORT OF SURG. R. D. MURRAY ON THE MANAGEMENT OF THE YELLOW-FEVER EPIDEMIC IN BRUNSWICK, GA.; LOCAL RELIEF FURNISHED, AND CAUSE OF THE INTRODUCTION OF THE DISEASE.

SIR: I have the honor to state that in obedience to your telegram of September 14, 1893, received at Key West Quarantine, Tortugas, Fla., about midnight of the 15th, I left Tortugas at 5.30 a. m., September 16, and arrived at Detention Camp, Waynesville, at 1 p. m., September 18, and at Brunswick at 3 p. m. of the same day.

I found the camp, under command of Passed Assistant Surg. Geddings, about ready for beneficiaries. The able and prompt superintendence of Mr. Fitzsimmons, of the Brunswick and Western Railroad, resulting in such quick completion of the camp deserves especial commendation. It was decided to open the camp at once, and on the 19th 120 persons were admitted.

At Brunswick I found a variety of opinions prevalent. Some determined to never admit the prevailing disease to be yellow fever, many forced to give up their preconceptions in face of Dr. Guitéras' overwhelming proofs which had been submitted the two days before and on the point of his departure, and many confident that yellow fever did exist, but distressed that the active and earnest measures for stamping out had not succeeded.

But in spite of the variety of opinions and worry as to the outcome I was welcomed and soon discovered that there was a sufficient number of hopeful and determined persons who could be relied on to fight to a finish in the public interest and in saving human lives whether exposed in Brunswick or safe without the limits.

My first duty was to approve the stationing of land guards by Passed Assistant Surg. Geddings and Sheriff W. H. Berrie on the 18th, that morning. A rapid survey showed that there were 20 known cases under treatment scattered all over the town and that any effort to stamp out would be futile. I soon became convinced that cases had existed for over a month in various localities and that fomites were so generally distributed as to utterly banish all hope of a prompt cessation of the disease until frost came.

To many it seemed that to wait for frost would kill every nonimmune and ruin Brunswick if not exhaust every person who had any work to perform, but I saw no other hope. Misinformed as to earliest time of earliest frosts, I named a six-weeks' siege as the most favorable outlook. Had I said ten weeks I would have been a prophet.

During my first evening I inspected the city hospital, the Marine Hospital, and the unfinished Episcopal Hospital, and carefully considered the chances for a place at which to treat patients who might be homeless or prefer to go to a hospital rather than remain at home. Much urging was resorted to for me to complete the large brick building designed as an Episcopal Church hospital. After due estimating I had to decide against the project, as it would require at least $5,000 and two weeks' time to get ready for a single patient and then work would have to be continued for a month or more. I could not agree that use of public money for private improvements would in the end be sustained by your office; decided to use the city hospital, a run-down affair of four small, detached cottages for indigent colored patients and the Marine Hospital for whites. The owner of the latter objecting to such use, the project was abandoned. This made little difference in the end, as it would have been impossible to get many to go to a hospital at all; subsequently about a dozen were admitted to the city hospital. I have been criticised for not establishing a hospital promptly, but do not feel hurt over it; and were my service to be repeated under same conditions, I would not establish one. The subsequent employment of sufficient physicians and nurses gave aid to practically every needful case in which there was a possibility of transfer to hospital.

After dusk of my first day I was called on by the board of health and prominent citizens, and during the conference a general plan of work and relief was agreed upon. A census was the first necessity. The chaos in other matters was present in the estimates as to how many souls were in the town.

Somehow the colored population had been forgotten, although at the time many were sick with yellow fever. The census, completed three days later, showed a total number of 5,230 persons of all ages in Brunswick proper—600 white males, 570 white females; total white, 1,170; 1,632 colored males, 2,428 colored females; total colored, 4,060. Of this number, 238 were reported as having suffered with yellow fever in 1876 or in Florida in 1888, or at other times. Evidently the actual number of immunes was greater, as in 1876 about every person in the village suffered an attack of fever of greater or lesser severity. A total of 40 persons were reported sick, of whom 24 were known to be sick with yellow fever. The census of Pelicanville, consisting of 35 white and 59 colored, is excluded from above. The population of Pelicanville was subsequently increased from Brunswick by 60 stevedores, who were transferred by the detention camp to load cotton and phosphate at the Terminal docks, and by some families from the country who had not communicated with Brunswick at all. The population of Brunswick was diminished by about 400 people who went to camp. This number was made up by persons who were compelled to come in from the country, and another addition was made by persons returning from St. Simons Island, generally on permits given by me. The increase in population was not equal to our fears and was immaterial.

The normal population of Brunswick is about 9,000. Of the 5,230 people, at least 4,500 were on the verge of needing relief; in fact some were receiving contributions at the time. A resident and enforced population at St. Simons Island, south end, distinct from the mills, of about 700 and of about 2,000 scattered in country houses, some resident, most refugees, made the number that might need relief about 8,000.

The procurement of these figures instead of appalling anyone simply defined our work and gave courage. The greater number of colored over white seemed to astonish everyone but me, and for a moment gave rise to senseless rumors and apprehensions of riot, violence, and other troubles. As soon as I could I appointed two colored physicians, with pay and free medicines, to look after all fever cases among the colored people, and four of the best colored men I could learn of to act as sanitary inspectors, whose duty it was to carefully seek out all persons needing aid of any sort and to act in such case as was advisable. The wisdom of this action was fully shown in a few days, resulting in quieting all fears and in relieving possible distress and misery.

CORDON AND GUARDS.

The land-guard posts, selected by Sheriff Berrie the forenoon of the 18th of September, were continued, except that slight changes were made as experience seemed to justify. Land-guard post No. 1 was at end of boulevard on the east; No. 2, on Darien road, near convict camp; No. 3, near old church on Waynesville road; No. 4, at Six-Mile Railroad Crossing on Waynesville road; No. 5, at Altamaha Canal bridge, or Four-Mile Railroad Crossing on Crispin Island road; No. 6, south of Pelicanville on railroad, to protect Pelicanville and Crispin Island road; No. 12, October 1, north of Pelicanville, to protect against persons going around and coming in from north side.

No. 14. On October 20 I found it necessary to place a guard on a blind lumber road in the woods between Darien and Waynesville roads, to prevent persons from returning too soon. This guard returned several buggies and carts.

No. 7, September 19. Water guard at Buzzards Roost, to prevent persons going up Turtle River.

No. 8, September 19. Water guard at Brandy Point, to prevent persons from going up or down Turtle River to St. Simons, Jekyl or St. Andrews Sound.

No. 9. On September 20 a station was established at Jekyl Pass, consisting of one schooner and three small boats, with seven men under the efficient charge of Capt. B. W. Fahm. This station guarded all the outlets to Florida and to Camden County on the south. During the night the small boats were placed at the mouths of three small creeks; in daytime guarding could be done from the schooner.

No. 10, September 24. Water guard in Back River to cut off chances to get to St. Simons or to the northeast from the rear of Brunswick.

No. 11, September 26. A water guard was placed at Academy Creek, which runs into Turtle River northwest of Brunswick, to intercept persons who might seek to leave Brunswick by way of the Altamaha Canal.

No. 13. On October 9 a water-guard station was made above Manhead Point toward the north end of St. Simons Island, to prevent persons from escaping from the island toward Savannah. This was thought to be useless, as there was apparently no desire on the part of any St. Simons Mills people to make their condition worse. The land-guard posts consisted of 3 men each, all of whom were required to be on duty at night. One was permitted to be absent during a part of the day. They were paid $2 per day, subsisting themselves. Inspections were frequently made by me or Sheriff Berrie and I am proud to record that the duties were well performed.

The posts were 4 miles or more from Brunswick, including a sufficient area to keep me from the charge of cooping up people. The posts were supplied with tents by me. The water-guard stations, except No. 9 at Jekyl Pass, which had 7 men, consisted of 3 men each, who furnished their own boats, arms, and provisions, and received $2.50 per day. The water duty was vexing, difficult, and at times dangerous; but the duties were always done on honor in spite of weather.

During the hard storm of October 12, all suffered much, and two boats were capsized, the guards losing their arms, food, and clothing. One boat was never recovered.

PASSES AND RESTRICTIONS.

Gentlemanly, orderly, and business communication was freely permitted. Persons were allowed to come into Brunswick after 9 a. m., and required to leave before 3 p. m., for transaction of actual and necessary business. No person dare say the principles of visitation were not well known to him. In no instance did disaster follow the simple adherence to my wishes, and were I to conduct a cordon every year I would ever permit just what I did permit this season. The land and water guards kept records of all persons passing in and refused to permit them to return any day after without a pass from me. All guards permitted people to pass out on business errands who held passes written by me. Every pass was taken up on first presentation and subsequently returned to my office. Thus country produce could come, fish, beef, horses, milk, hay, and feed could be procured, and articles absolutely needed on islands and in the country were obtained with scarcely an idea in the minds of the people that all were under surveillance. No favors were shown to anyone. No passes were given for fun or comfort. Business or distress were the only pleas that obtained the coveted slips. Issuing passes took much of my time; but it was best for me alone to issue them, as then I was responsible for any untoward incident. I know there are many who object to my course in giving passes and allowing daylight decent communication, but I will wager the objectors have never been within a guard line as a part of the people, and have a poor idea of the multitude of various wants and needs of a community.

The water guards were removed by November 16, several stations earlier to save expenses, and as few people wished to return to Brunswick by water. All land guards were removed on November 30, although the fever had not entirely subsided. But the weather was inclement. I was admitting about all who asked permission and the risk of careful persons taking the fever was next to nothing.

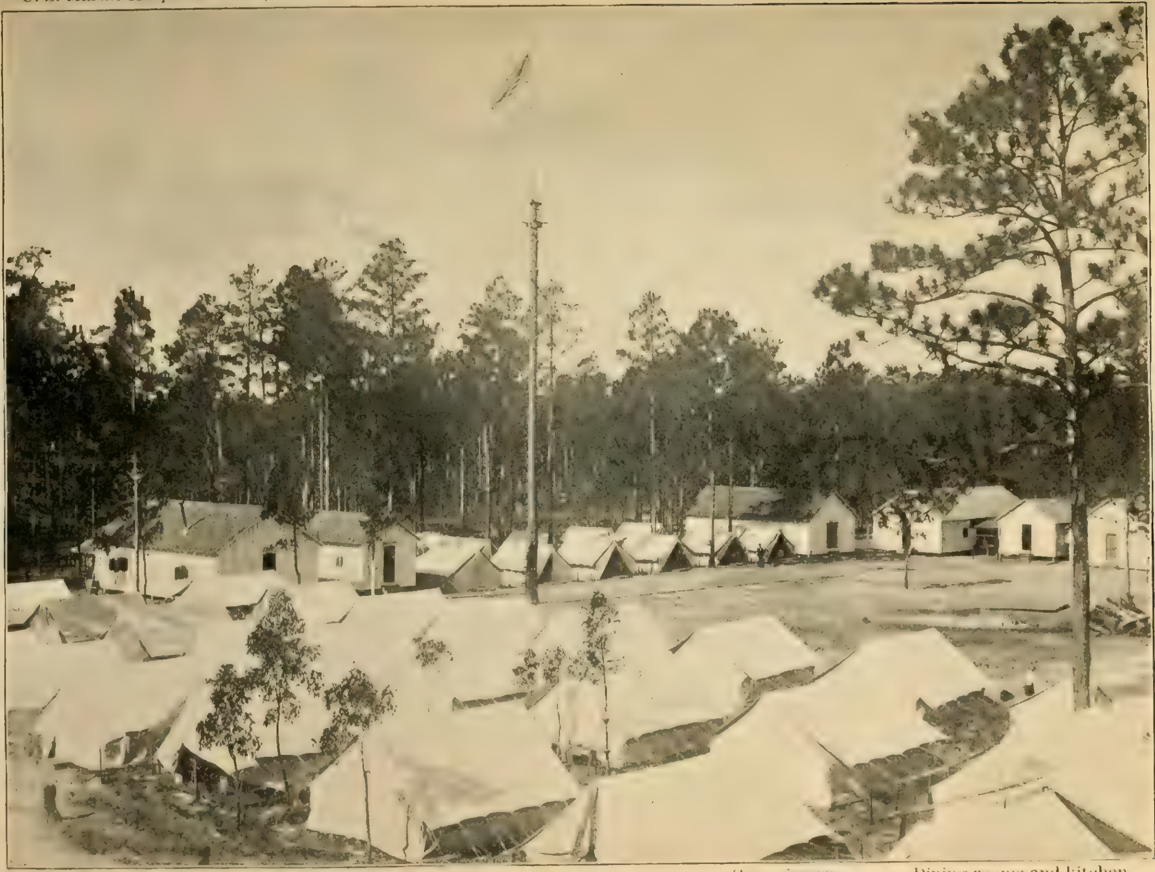
I have no reason to regret the early removal of the guards in any instance. I now wish I had removed all on November 25, the date of first frost at Brunswick, as but two cases were officially reported after that date. It was possible for persons walking, or in skiffs at high tide, to get out of Brunswick, but impossible for buggies or wagons, or large boat. The element of danger to any person trying to get out prevented efforts to do so except in a few instances from which no harm came.

The principles embodied in the Treasury Department circular of August 18, and the behests of your letter of September 28, 1893, in regard to illicit and too frequent communication were carried out to the utmost of my ability. The primary fear that when free food would be furnished in Brunswick the country people would rush in in hordes was not realized in fact, as the chance to send in for supplies met all needs. In no instance did a case of yellow fever arise outside of the Brunswick cordon after the guards were set on September 18, except at Detention Camp, where there were two. It is conclusively shown that the Island, Jesup and upcountry cases occurred from communication prior to September 17, when the disease was declared epidemic in Brunswick.

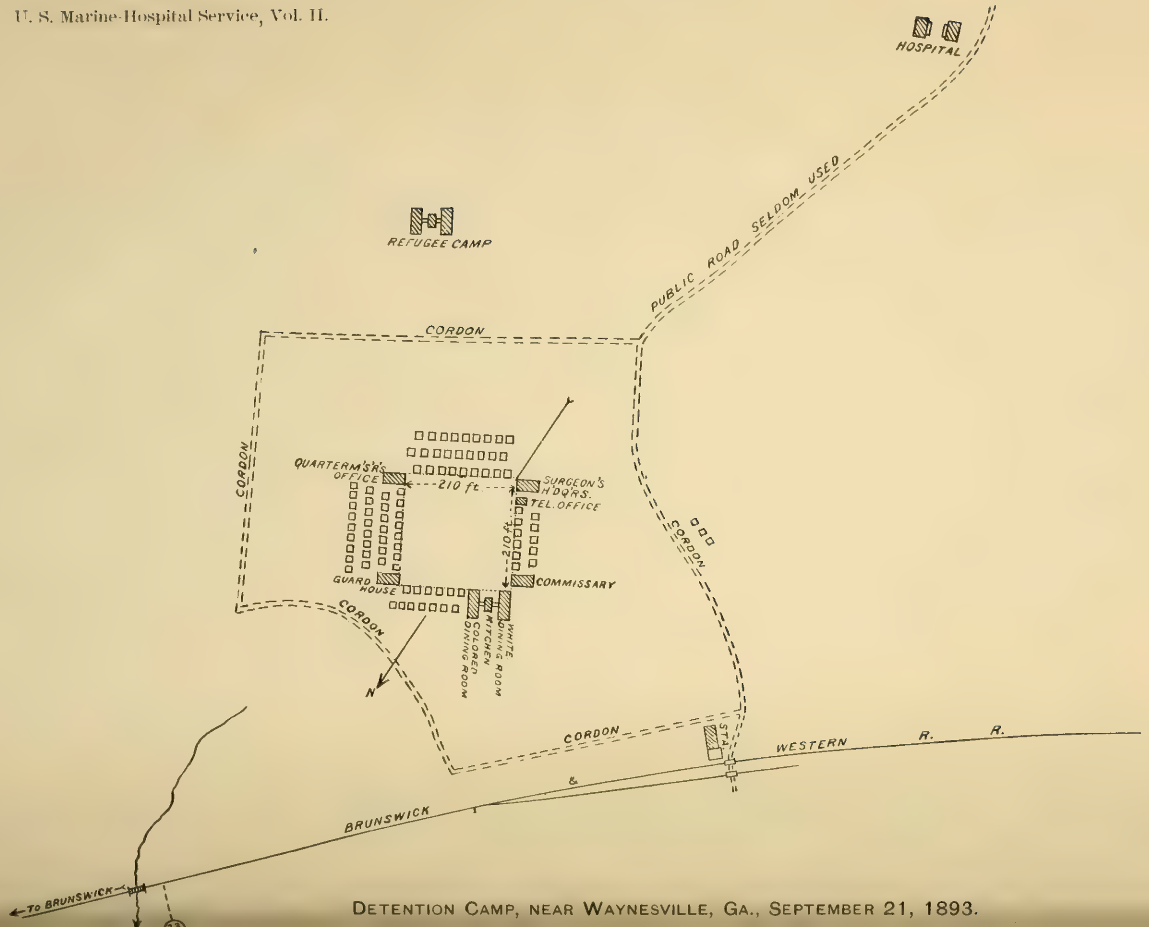
DETENTION CAMP.

The site of Detention Camp was chosen by Surg. Hutton after careful consideration of healthfulness, proper distance, and convenience, and was begun about August 22.

The nonoccurrence of fever cases at Brunswick during latter part of August and 1st of September caused the raising of all restrictions and temporarily a suspension of work on the permanent buildings. However, within two days from



DETENTION CAMP, NEAR WAYNESVILLE, GA.



Detention Camp, near Waynesville, Ga., September 21, 1893.

the declaration of the epidemic the camp was opened and received 120 detaines. It is located on high ground 1½ miles south of Waynesville, Ga., 23 miles from Brunswick, and consists of permanent kitchens and dining rooms, commissary, executive offices, telegraph office, linen room, guardhouse, etc., arranged around a square. The tents, with planed board floors, were arranged in rows around three sides of the square. The hospital, consisting of double ward, kitchen, and officer's quarters, is a half mile distant, the ground being cleared off for placing of tents for extra patients.

The Refugee Camp is adjacent to the Detention Camp, but separated by a guard beat and a natural growth of woods and underbrush, which was not removed. There was accommodation for 400 detaines and 200 refugees. From the opening of the camp to November 24 (the latest report I have), 505 detaines were accommodated and 18 returning refugees. This number includes 60 stevedores who were passed for Pelicanville to load steamers at the East Tennessee docks, and several persons who were subsequently employed in the camp; also some who were refugees from the beginning, not having means to "move on." Of the number passing through camp out from Brunswick 36 were immunes; several of these passed on with one day's detention prior to October 6, when the permission to pass immunes was rescinded.

After the occurrence of frost at Jesup and at places higher up, some immunes were passed through on previous permission given by the health authorities of the points to which they were bound.

About 30 discharged sailors from vessels arriving at Brunswick were passed through, it being considered criminal to permit them to lodge in the infected town. The two cases of yellow fever were in this class, the men having deserted from the camp train and spent nights in Brunswick after having been given tickets for passage to camp. It will be understood by those who know anything of the return-voyaged sailor that these men gave more trouble than a vastly greater number of any other kind of human beings. Six persons were admitted from Jesup, who, however, were not Jesup citizens. The highest number of employés at one time was 64, the lowest was 5. Employed persons, cooks, waiters, guards, etc., were taken in and discharged as occasion demanded.

The Brunswick and Western Railroad furnished a train of engine, baggage car, and coach, with crew, for $80 per day, which ordinarily made two trips daily to Brunswick and return. When a large quantity of articles required disinfection but one trip was made, as the engine was needed to supply steam to steam car. Trips were not made on Sundays except in emergency.

The officer in command of camp was authorized to admit persons who made the trip by private conveyance or came in from the surrounding country, but those who left Brunswick were required to get passes from me which admitted to the train and served as primary record at camp. The pass system was begun to aid the conductor in knowing whom to carry, and prevent parties going on mere pleasure jaunts.

Due and careful measures were adopted and enforced to be certain that all persons who left camp were free from infection in person and luggage; that no one took or conveyed fever after his discharge is evidence that the efforts were successful.

The fumigating of cars with sulphur gas was begun on September 23 and continued till October 28, during which time 680 cars were disinfected and passed. After the date mentioned it was thought advisable to cease, as the colder weather would do more effectual cleansing than the sulphur could. Although the camp seemed at the best place, several malarial cases developed which were attributed to local influences. When the choice was made the whole country was overflowed or sodden with water, which made high ground the first desire. My own choice would have been at Six-Mile Crossing, where both railroads, the Brunswick and Western, and East Tennessee, Virginia and Georgia, could have been used, and thus Jesup could have been easily accommodated. The lessened cost of train service would have allowed more expense for guards if more had been needed, and the camp would have been resorted to by many more people. The matter of distance is not to be seriously considered, as discipline and care are the only protective means to be relied on.

Much credit is due Passed Assistant Surg. H. D. Geddings for his management of the camp.

MAIL.

On September 20 I asked permission to use previously punched envelopes for all letter mail. At Brownsville, in 1882, no mail was started out except first class, and that was placed in envelopes punched with eight holes. The hammer of nails used at Jacksonville and Waynesville made self-sealed holes through the whole letter and envelope, which must have prevented the sulphur gas from coming in contact with the letter itself, which must be the dangerous agent, if there is any, in a letter mail. The plan in use tears and defaces the contents, and in case of important letters or checks, does unnecessary damage. The post-office at Brunswick kept punched envelopes on sale during the quarantine. Merchants and others soon adopt the plan of keeping a supply. A conductor's punch is handy for a small number, but a set punch is better, as a half package can be perforated at one stroke. I do not believe, however, that letter mail will convey the infection unless some effort is made by the sender to specially infect it.

LOCAL RELIEF.

On my arrival there were 20 cases of yellow fever under treatment. On the 21st of September, when the census was completed, there were 24 cases of yellow fever out of a total of 40 sick persons.

The physicians in the city were Sanitary Inspector C. Faget, M. D., Dr. Hugh Burford, Dr. J. A. Dunwoody, Dr. R. Hazelhurst, Dr. J. A. Butts, Dr. C. A. Blair, Dr. E. V. West, and Dr. H. R. Davis. Sanitary Inspector R. E. L. Burford, M. D., was at quarantine station within call. These constituted a sufficient force to deal with many more cases than existed. Thus there was no need to call for more physicians, although it was plainly to be seen that the necessity would soon arise, as the immunity of 5 of the above named was not assured. Subsequently 3 of them suffered with the fever. There being at least 500 white immunes and a greater number of colored, and it being my desire to give all possible relief, I decided to depend for nursing on the local talent, thus saving cost of transportation and placing the wages where they would do the most good. My apparent indecision in this matter caused some comment, but the event proved the correctness of my judgment. I was not positive at first as to my authority for assuming charge of the medical relief, but could not believe my duties only included guards and restrictions. The harassing doubts and uncertainties for five or six weeks had about exhausted the patience and pluck of everyone. It seemed best that I take full charge of affairs relating to sickness by fever. Some arguments were used in favor of my controlling the issue of rations, but my prejudices were against the General Government ever giving the people food relief. Supplies were coming in from a liberal public and considerable money had been received. Up to September 23 $3,379 had been put in the hands of the organized relief committee. If I had taken charge of the distribution of food it would have been only fair and proper for me to disburse the money; then, in a short time, when the fact was known that a Government official was in charge of the food and clothing relief, the contributions from the people would have ceased altogether and the entire sustentation of the city would have devolved upon the Government. I was at all times ready to prevent actual starvation by direct aid, but could not propose to anticipate by establishing a commissary and a relief bureau so long as my faith in the generosity of my people held out.

During the season of eleven weeks the relief committee received over $32,000 in money, besides ample supplies of provisions; in fact, there was a surplus of staple articles of food to be disposed of after the siege was over. The churches received contributions, some of which were not turned over to the general relief committee. The societies, Odd Fellows, Knights of Pythias, Masons, firemen, etc., all received more or less, which was in the main disbursed by the respective society. Thus it will be apparent whether it was, or was not, good policy for the Government to give full relief to a community. It was not in this instance necessary.

The relief committee very wisely, and I think for the first time in the history of epidemic charity, on the 1st of November, at least five weeks before we expected the end, gave out in an able note that contributions might cease from that time. This fact, if no other, shows the desire of that body to ask for no more than enough to carry Brunswick over the existing distress.

The relief committee sought to aid the medical relief by filling requisitions for food and delicacies for the sick by means of the following form:

BRUNSWICK, GA., ———, *1893.*

To J. W. SMITH,
Commissary Agent:

Please furnish ——— ———, No. ——— ——— street, with the following:

——— dry catawba; ——— brandy; ——— sherry; ——— port; ——— Johnson's fluid beef; ——— Wyeth's meat juice; ——— corn starch; ——— crackers; ——— tea; ——— milk; ——— oat meal (Quaker); ——— eggs; ——— sugar; ——— champagne.

——— ———, M. D.

It would have been more satisfactory to all parties if all the articles enumerated in the blank and other articles sent for distribution had been issued in accord with physicians' orders, but it was not possible to dissociate favoritism and "personal knowledges" from actual needs in all cases. However, the desire of the relief committee was to give all relief possible, and I am confident that the Brunswick relief committee more fully filled the place to which men are called in times of distress than has been done before.

I soon found that there was much sickness and distress among the colored people; the poorer always suffer first and most in panics and pestilence. During my first week I appointed the two colored physicians and four prominent colored men to serve this class. This action forestalled any chance of strife or riot, the reports of which were utterly false and unwarranted.

On October 6, Drs. Wall, of Tampa, Fla., and Booth, of Shreveport, La., having arrived, I, in accordance with your telegram, placed all the local physicians on pay, directed that all medicines should be paid for by me, and assumed payment of the nurses.

On October 13 Dr. J. C. Legare, of Donaldsonville, La., arrived and tendered his services free of charge, except carriage hire. The relief committee had inconsiderately begun to pay nurses a higher price than I deemed proper. We were striving to relieve the suffering and prevent starvation among those not sick. It was not advisable to lay the foundation of a fortune or a paying business in any case.

The prescriptions were filled at three drug stores. There was no time to start a dispensary, and for the short period one was not advisable. Although the medicine bill was comparatively large—about $4 per patient—there was no waste, no delay, no substitution. The great number of malarial cases throughout the city and region compelled me to make no distinction at the drug stores between character of fevers.

Thus the medicines paid for include much for diseases other than the epidemic fever. In this I had my own precedents, and their practice is warranted, provided medicines for chronic diseases and other diseases in those able to pay shall be paid for by recipients.

Nurses were required to be asked for by the attending physician on the accompanying form:

ORDER FOR NURSE.

Date, ——— ———.
Patient, ——— ———.
Address, ——— ———.
Sex, ——— ———.
Color, ——— ———.
Sex of nurse, ——— ———.
Remarks, ——— ——— ———.
——— ———, M. D.

They were not to be of near kin, and were to receive $1.50 for twelve hours' duty. It is a pleasure to state that the duties were, with rare exceptions, well performed, and I feel confident that the comparatively small sums disbursed through the nurses to the town did much more to relieve attendant distresses than if a host of foreign nurses at high prices had been imported. It was rare that a patient was not nursed by a friend or acquaintance and that satisfaction was not given. Steward Cragg and Mr. O. V. Barkuloo conducted the nurse bureau with great skill and dispatch. In all, 83 male nurses and 161 female nurses were employed. These numbers do not include nurses paid by the relief committee prior to October 6. Of course it is to be appreciated that many patients did not need a hired nurse, and that in some instances malarial patients had them. The second, third, and fourth weeks in October comprised the trying period with the physicians. I had recalled Dr. R. E. L. Burford from quarantine only to have him sicken, thus losing two weeks of his valuable service. Drs. Blair and West sickened and were off duty about fifteen days each. The former got a famous newspaper notice and the latter had a very narrow escape. Excepting Dr. Dunwoody and myself, at some time every physician was off duty, some for longer time, others for a day or so. Unfortunately the fatal illness of Dr. Wall's wife called him home on October 29. Drs. Faget and Booth remained till the middle of November brought no work for them. Dr. Legare remained till the close.

The total number of recorded cases of yellow fever in Brunswick and suburbs within the guard lines from August 12 to December 11 was 1,072, deaths 46. White males 200, deaths 25; white females 153, deaths 10; total white 353, deaths 35; percentage, 9.9. Colored males 319, deaths 5; colored females 398, deaths 5; total colored 717, deaths 10; percentage, 1.35. Mongolian males 2, deaths 1. The list of cases has been carefully revised, in order to exclude duplications and relapses.

The occurrence of sickness in the physicians necessitating visits by others and the failure of parties to state that they had already received attendance caused some confusion.

The list of deaths contains four from the practice of one physician who refused to report any case of yellow fever, although he had previous experience and a large clientele. From it is taken the cases in which necropsies clearly showed the cause of death to be other than yellow fever. Fifteen necropsies were made in Brunswick, 7 in yellow fever cases, 7 in malarial fever cases, and 1 in a case of rheumatism.

The list of cases shows the following to be the number reported by each physician. That a greater number is, with two exceptions, claimed to have been treated is due to the taking up of cases previously treated by another, which had to occur in case of illness or absence of a physician, and in some cases of dissatisfaction with the first medical attendant.

Cases reported as yellow fever.

J. A. Dunwoody	94	R. E. L. Burford	79
J. A. Butts	98	C. A. Blair	120
R. Hazelhurst	39	A. R. Booth	139
E. V. West	50	J. P. Wall	166
C. Faget	83	R. D. Murray	23
J. C. Legare	73	Unknown and miscellaneous	34
H. Burford	74		

The prevalence of malarial disease was well appreciated by all after care was used in diagnostication. Dr. Hazelhurst reported 28 malarial cases, Dr. Blair 163, and others in a similar proportion. An accurate record of such cases could not be kept, but there is good reason to believe that quite a thousand cases of malarial fever were treated, some occurring in those who before or after had yellow fever, some in immunes, and to my knowledge in several who did not suffer with the epidemic and conveyable affection. But it will not serve to deny the existence of yellow fever because of the existence of malarial disorders such as intermittent, remittent, hæmoglobinuria, cachexia, etc. Neither will it do to doubt the existence of a quarantinable disease because all of southeast Georgia was suffering with an inordinate share of malarial poison. The yellow-fever cases were of the same type and nature as those on shipboard, where, in most instances, the element of malaria is absent.

The occurrence of yellow fever in a malarious locality, or especially bad season, gives much more anxiety to and requires much more care in diagnosis and treatment of cases from a conscientious physician than the care of cases under other conditions. To treat a case of one disease when suffering from the other may not make much difference in some circumstances, but in yellow fever it does make a vast difference in every way, and it is provoking to have a patient burn up with malaria while only antipyretics are used, or die of congestion when convalescing from yellow fever.

In all cases when a death occurred the used bedding that could not be washed was burned and paid for, if any value, and the house fumigated with sulphur.

POST EPIDEMIC DISINFECTION.

Beginning on November 25 and continuing, except on rainy days, till December 12, with a large force of men and sufficient teams, all the bedding, carpets, etc., from houses in which fever had been reported were carried to the steam car, which had been used at the detention camp, and subjected to steam of a temperature not less than 220° F. Thus 560 houses were forced to have the probable fomites rendered harmless, if not by the process of disinfection, by effectual airing. It was not thought necessary or practicable to use bichloride or sulphur in the houses, as the weather was cool and the habitants could not be turned out for sufficient time. Experience has shown the uselessness of any general method of disinfection during the progress of an epidemic; a good frost or a hard blow will clean up a town more certainly than sulphur can, and if attention be given to the bedding after a frost all has been done worth considering. Frost had occurred at Brunswick on the night of November 23, with ice at Jesup. Up the country 20 miles and more from the sea it had occurred before. Events showed that the frost of October 30 had practically freed Jesup from the pest. The cold weather higher up the country caused the refugees to need the winter clothing left in the hurried departure from Brunswick in the hottest weather and convinced them that if cold at Macon or Atlanta it must be cold enough on the seashore. The consequent pressure on me for permission to return after November 15 was greater than from the desire to get out in the face of danger. A newspaper jocularly and truthfully stated "now the fun begins." I fancy it is easier to keep a people in than out. Urging and reasoning worked with some, but many rushed home in spite of persuasion and surveillance. The guards now had to fall outward, as it were, and prevent an invasion. I gave many permits on conditions for heads of households to return to air their dwellings and prepare for the reception of their families. Finally I succumbed to the common desire, and on Thanksgiving Day removed the last guard, to the joy and relief of all concerned.

Fortunately but one case arose among those who entered the city after removal of the guards. He had little or no treatment, and died on December 11 with a report of congestion of the brain. As he was a sailor deserting from Savannah, it was not certain that my guards could have kept him out, he being consigned to a sailor's boarding house. A close watch was kept by all physicians who had been trusted during the epidemic for cases after December 1, but none was discovered; the continuance of malarial fever during December and the occurrence of epidemic influenza gave rise to many close contests in diagnosis, but I believe all acted honestly and were not influenced, as in the summer, by the fear that spoken truth would forever ruin the prospects of the town.

It is easier to decide on a case of yellow fever and to report it after one is used to doing so and after frost than in midsummer when one will "hurt the town," and receive, in any case, a multitude of not very choice epithets and a few curses.

INTRODUCTION OF YELLOW FEVER.

The introduction of yellow fever which has puzzled many intelligent men for many months, and the ignorance of which has given rise to much strife is like many other things very simple when you know. The quarantine is located in the southern end of the marsh, 3 miles south of the city limits. Begun nineteen years ago, the stone and other ballast discharged have made an irregular island of about 3 acres in extent. Rock, chiefly granite, has been placed at the water's edge, and behind same sand and rubbish has been thrown until the island is raised to a proper height for a wharf, say 5 feet above highest tides. Spurs of rock are run out at different points so that earth and sand can be thrown into the water and the marsh. The primal notion was to make land to be used as a loading and discharging wharf, and thus the ballast was a matter of ulterior importance at least. A ballast company, consisting of residents of the city, furnished hoisting engines and controlled the discharge, receiving payment for use of the hoisters and the privilege of discharging. The city was given a small portion of ballast receipts as a proof that no idea was entertained of doing wrong or making overcharges. A quarantine for revenue to private individuals.

INTRODUCTION.

The quarantine officer lived in the city and visited vessels and the station on call, never remaining there after his duties were performed. A local force of 2 to 4 men was kept at the island while vessels were undergoing treatment, which consisted of ballast discharge, salt-water and bichloride washing, and pot fumigation.

A requisite of the city board of health was that all earth and sand must be put under water, but as that body was not making islands it was not aware that they asked for more than could be done. It was known to some persons that once in a while a crew of colored men would go to quarantine to discharge ballast. The idea was not a good one, but as for years no trouble had resulted, no action was taken, and many never knew of the method. In fact, I was in charge of the station for three months before I appreciated the matter and the risks that had occasionally been run in the past. As a rule Spanish vessels hire ballast crews, as the sailors refuse to do hard work in the sun. As a rule Spanish vessels come from Cuba, but it was expected that all such should first go to the United States quarantine at Sapelo, 30 miles distant.

The trouble in Brunswick arose from breaking the regulation as to rubbish ballast and the rule as to Cuban vessels going first to Sapelo.

The first case of yellow fever to occur in Brunswick was in Capt. A. J. Biddle, of the American bark *Anita Berwind*. The vessel left Havana June 10, cleared 9th, and arrived at Brunswick quarantine June 15; was fumigated and released on June 17. Capt. Biddle came to Brunswick June 17 to charter his vessel; stopped in Ocean Hotel until morning of June 19. Was taken sick night of 17th or morning of 18th, and was urged to let his vessel obey charter by going up Satilla River and remain in Brunswick till he got better. He persisted in going off, and died near Conquest's Landing, 50 miles up the river, on the 25th of June. The cook subsequently sickened. Surg. Carter, Dr. Dunwoody, and Dr. Brunner united in doing everything to avert a disaster, and I think fully succeeded. But the warning was not heeded at the quarantine. It is rare that a man set off from his fellows to smell out and ward off pests has any warning as to what his conduct should be. He must be hard and fast in discipline of self and others and alert all the time to succeed for a term of years in keeping up the record of "no harm done" which will be set for him by ordinary course of commerce of ninety-five out of every one hundred vessels.

The Spanish bark *Maria*, "a dirty vessel," arrived from Havana June 16, with sand and earth ballast. Had a ballast crew of 7 colored men, who left when ballast was out. Entered at custom-house July 1.

The American brig *H. H. Wright*, with 40 tons stone ballast, arrived from Havana on June 22 and entered at custom-house June 26. No ballast put out. Some hints have been given as to this vessel, but I can find no proofs.

Spanish bark *Felo*, "a dirty old hulk," with 180 tons sand from Cienfuegos, an infected port, arrived July 17, 12 in crew. A ballast crew of 7 colored men was procured to discharge the vessel, who left when the duty was done, the vessel remaining for washing and fumigation, Vessel released July 29 and entered custom-house July 31. The mate of this vessel suffered with fever at quarantine; was seen twice by the quarantine physician; was weak when the vessel reached wharf at Brunswick. When able he traversed the city at night, as did several of the crew. It has been claimed that Assistant Surg. Branham laid on the same bed at quarantine which had been used at times by the mate, but there is a better cause for Dr. Branham's fever, which is the same as that of the mate, i. e., the ballast. This ballast evidently infected the mate; it could not be put under the water.

Dr. Branham was at the quarantine continuously from July 31 till August 7. He, in desperation for exercise, if for nothing else, walked over the rock spit on which this Cienfuegos ballast was thrown, and, like the mate, was infected.

The Spanish bark *Galofre*, with sand and earth ballast from Havana, and 13 men, arrived on July 22. A ballast crew of 7 colored men discharged her and returned to the city. The vessel was being washed down when Surg. Carter and Assistant Surg. Branham arrived at the station. Dr. Branham took a drink of water on board. Thus far water has not been charged with carrying yellow fever. The vessel was released on August 4 by Dr. Branham. The *Galofre* did no harm to Dr. Branham, but her ballast, powerless to infect one of a thousand immunes, could infect him whether he was suffering with Staten Island malaria or not. Dr. Branham slept in Brunswick the nights of August 7 and 8, returning to station in daytime. It has been thought that he might have caught the fever in Brunswick. I think it safer to believe that he got it from part of the filth of Cienfuegos and Havana transferred as it was to Brunswick.

What of the 21 colored men who left the quarantine in clothes dirty and grimy with Cuban earth? They were of Brunswick and distributed about the town. No record has been kept of them. My days of leisure in Brunswick were days of illness, and I could not hunt evidences when ill.

It was evident to me, from my first acquaintance with Brunswick that somehow the colored people were suffering with yellow fever, and I believe that through them, and not through Dr. Branham, the disease was introduced and generally disseminated as early as August 5. That no deaths gave a hint of conditions does not disprove my surmise, for colored people rarely die of yellow fever, and often need no medical aid in it.

I do not understand that it is my province to report on the service actions prior to September 18, as that belongs to Surgs. Hutton and Carter and Prof. Guiteras, but it is well to note that about the middle of August the disease began to affect white people, 6 cases occurring, including Dr. Branham's, up to the 26th. The terrible storm of August 27 and 28 came in as a diluting force and, in my opinion, delayed the outbreak for two or three weeks following. I have known of wind action mitigating the epidemic force and progress, and in the tropics that is the only natural force depended on.

It is not fair to assume that the physicians who visited Dr. Branham distributed the poison about the town, as no case occurred in their homes or lodgings until long after the city was admittedly infected.

Johnson, the tailor, died September 18, and Killian, the shoemaker, died September 14, both of Newcastle street. Both being dead, it is not possible to discover if either or both did any work for sailors or ballast crew men from the Spanish vessels. The presumption is they did not. They worked in the infected region, which will be described. The commonest resort for colored men and sailors is a dance hall on Oglethorpe street, near Monk. In this region are a number of saloons which keep late hours in spite of city ordinances. Along Bay street, from Gloucester, south, are also many saloons, and from Monk street down to the lower end dozens of men, sailors, stevedores, roughs, and women used to mingle, jostle, and parade from sundown till past midnight.

A quadrilateral, bounded north by Gloucester, east by Richmond, south by Manchester, and west by Day street, including Oglethorpe and Grant streets, north and south, and Monk cross street, seemed to be the poisonous area. Of the 45 white, 10 colored, and 1 Mongol deaths 16 whites either worked or lived in this region; 2 were policemen, whose duties kept them in it much of the time. Of the 10 colored deaths 4 lived in the region. The Chinaman lived and worked in it. Thus 22 of the 46 deaths may be attributed to the infected region. An analysis of all the earlier cases will show similar results.

There were other deaths at later dates on some streets extended and in other parts of the city. It is evident to me that the Cox child, the third known case, was infected by her immune father, who was a trash gatherer on Newcastle.

I have the honor to remain, very respectfully, yours,

R. D. MURRAY,
Surgeon, Marine-Hospital Service.

SUPERVISING SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

REPORT OF SURG. R. D. MURRAY ON THE YELLOW FEVER AT JESUP, GA., AND SOUTH END OF ST. SIMONS ISLAND, AND UPON COMMERCE AND LABOR DURING THE PERIOD OF THE EPIDEMIC.

SIR: In addition to my letter of October 10, 1893, in regard to Jesup, hereto attached—

REPORT OF INVESTIGATION OF YELLOW FEVER AT JESUP.

BRUNSWICK, GA., *October 10, 1893.*

SIR: I have the honor to report that on receipt of Marine-Hospital Bureau telegram of September 30, and the notice that a special train would be sent for me from Jesup, I left the bedside of a dying girl at 1 a. m., October 1, and, riding 4 miles in the dark and dew, I took the train, reaching Jesup at 3 a. m. Mayor Steele, Drs. Tuten and Little, and other citizens met me with a tacit welcome. It soon appeared that Dr. Tuten had insisted that Warren had died with yellow fever, and had thus offended the mayor, Drs. Eason, Drandy, and the majority of the people.

Listening to the story of Drs. Tuten and Little, I was inclined to consider the case one of yellow fever, and only wished a sample of urine. Proceeding in the dark toward the house, we were warned that Mr. Warren's father would shoot at us if we approached the house. At this moment Dr. Eason came up and volunteered to procure the urine. He failing, got permission for me to try. The urine being albuminous, I decided the case to be yellow fever. To this Drs. Drandy and Eason and the mayor, with many others, bitterly objected. Dr. Eason's history of the case only convinced me more, but in answer to the mayor's queries and to what post-mortem conditions would swerve my opinions, I told him what would, and also what six points would be found, viz, bloodless body, shrunken liver, of the color of cane of chair; empty gall bladder, small dark-blue spleen, red, bloodless kidneys, and a half gallon of black vomit in stomach and bowels.

So the mayor, deceived by my assurance, ordered the autopsy, which was performed at early daylight. My foretelling was truthful. The five doctors, including Dr. Samuel (who had disputed me), concurred. I ordered a prompt burial and fumigation of the house and returned to Brunswick, as the wretched state of the people and animosity to Drs. Tuten and Little would utterly prevent a general outlook. Dr. Drandy went to bed with a probable relapse from yellow fever; Dr. Eason left at once for Dales Mills. On Tuesday I returned on a hired special and found, as reported, six cases, all now under Dr. Tuten's care.

* * * * * * *

I learned that the fever had been in Jesup at least as early as September 6, and the town had four known recoveries, viz: Rowland, telegraph operator, whose wife and sister-in-law are ill; Robert Cole, the baggage master, and Drs. Drandy and Little. Sources of contagion are not known, except in case of Dr. Little, who contracted it from an early Brunswick refugee's child early in September or last week of August.

As reported, I placed guards on October 3, putting Mayor Steele in charge. At the time I did not know of Dr. Little's immunity, or I would have placed him in charge.

On October 4 I took a nurse to Jesup to serve the Grey sisters, and am now glad I exercised the forethought.

Mrs. Ogden, the second death, was frightened by discovering the presence of the gate guard at 10.30 a. m. and died at 3 a. m., after apparently complete convalescence.

As reported to you, the town of Jesup has 609 inhabitants—280 whites, 329 colored—of whom but 15 or 20 are possible immunes.

Warren's contact is in doubt. I do not expect to find that Warren contracted the disease in Brunswick or directly from here. * * *

Prescriptions will be filled at Dr. Tuten's drug store by a competent pharmacist.

To-day I sent another female nurse; to.morrow will send two male nurses to care for Drs. Tuten and Samuel.

Very respectfully, your obedient servant,

R. D. MURRAY,
Surgeon, Marine-Hospital Service.

I have further to report the following:

Careful inquiry has shown that a case of yellow fever occurred on August 16, 1893, at 223 South Cochran avenue, Brunswick. Dr. John Guitéras saw the case on August 19, but would not positively decide. Since then, as the same person suffered an attack of malarial fever in Detention Camp on September 30, he has had all doubts removed and concludes that the case was yellow fever. The girl removed to 407 D street on August 21, where she remained until September 21. The persons owning the house left Brunswick on August 21 for Odessa, where they took conveyance for Harpers, 6 miles distant. On the way out, Maud, age 6 years, became seriously ill, in due course black vomit occurred and she got up very weak. The grandmother, who had her suspicions about the former case, treated her in her way for yellow fever, as she had done in the case of the young lady on August 16. Dr. Little, of Jesup, rode out the 12 miles, on August 23, to see the child; remained at house several hours, taking dinner. He again visited on the 25th. The child recovered, and no other case occurred in the two families, consisting of nonimmune, 2 adults, and 8 children and 3 immune adults.

Dr. Little was taken ill the night of August 27—the night of the hurricane—and remained ill with fever for three days; he got up very weak; had to return to bed for a day.

Dr. Tuten had his suspicions, as he knew of the visit to the child in the country. Subsequently, through contact with Dr. Little, Rowland, telegraph operator, and Cole, baggage master, were taken ill on September 6. I have seen all three and consider them immunes.

The sister-in-law of the young lady left Brunswick on August 22, and stopped at Gardi. She was visited by Dr. Drandy on August 24, and perhaps subsequently. Dr. Drandy fell sick on September 2, and when I saw him October 1 he presented signs of having suffered with yellow fever; subsequently he was prostrated for three weeks, perhaps due to the exertion the night of September 30, and the attendant contention and excitement.

The lady at Gardi recovered, gave the disease to no other, and went to Savannah about September 4. She was afterwards sent out of Savannah to serve a term in quarantine.

Thus the fever was introduced into Jesup, and it is not necessary to waste time trying to prove that Charles Warren visited Brunswick at any date in September. I have a fair idea of Warren's movements during all of September and until Wednesday, September 27, when he returned from Screven to die three days later, and Brunswick is not included in them. I have tried to discover other sources of infection during September, but, thanks to Major Steele's rigid surveillance of Brunswick refugees, none can be traced.

The strife, ill feeling, and terror excited by Warren's death made it useless for me to try to carefully inspect the town on October 1. The people would not go to camp then. To go 38 miles south, and then back 20 miles, waiting for the camp train in the woods, was a rough outlook. Many were going to the country at once, and would have gone in spite of any number of guards. It was better to give them a day to disperse as suited them than to interfere and get the worst of the effort. I earnestly advised all to remain at home and be isolated; to go to the camp on the 3d, when I would return with a train. Many took the first hint; none the second.

On the 3d Mayor Steele and Marshal Milliken surrounded the town with guards, in accordance with my instructions and a detailed plan, and the success was remarkable. One guard deserted; one white man, aided by a privileged person, escaped; three negroes crawled out through a swamp we thought impassable, but were all caught and returned. The chase for the white man resulted in his getting well up into the country, where he was harmless. Of the refugees from Jesup one, Leggett, had the fever near Hazelhurst, but recovered without conveying the disease to any other.

The experiences at Gardi, Odessa, Jesup, and Hazelhurst sustain the old-time impression that yellow fever does not spread in the piney woods. Dr. F. T. Lincoln arrived the night of October 3, and had general charge of treatment of patients and of the guards. Mayor James Steele had immediate charge of the guards and patrol, and performed his duties in an admirable and confidence-producing manner. At one time it was thought it would become necessary to call for relief from the public. I preferred rather than do so to ask permission from your office to issue rations to the actually needy, but the mayor and city council decided to start necessary labor on the streets, for which the city funds could be used, and thus the plucky little town avoided the notoriety of having called for outside aid from any source.

In as far as was needful medicines and nurses were provided by me at public charge. The income from the guards and patrols aided materially in relieving distress among the 609 people who were hemmed in by the cordon. Evidently Drs. Little and Drandy suffered with the fever the last of August and first of September. Dr. Tuten sickened October 7, and recovered after a mild attack. Dr. Samuel, sanitary inspector, sickened on the 9th, recovering after running the gamut of bad incidents—remarkable, considering his age, 50 years. There were 39 cases recorded; the first August 27, the last November 20: White males, 16; white females, 15; colored males, 5; colored females, 3. Three deaths: Warren, white male, 25 years old; Mrs. Ogden, white female, 38 years old, and Mr. Gray, white male, 52 years.

I desired to remove the guards at Jesup on November 1, thinking the frost of October 30 and 31 would insure safety. No cases occurred after the 28th day of October till November 15, when the sheriff returned from the country and moved into the jail. His wife and two children sickened and were treated by Surg. Carter. In spite of this incident I do not think any harm could have followed the removal of the guards. Surg. Carter disinfected the town thoroughly by steaming clothing, bedding, etc., on November 11 and 12, and subsequently by long exposure to air. I made frequent visits to Jesup during October, and one November 23, to pay the October guards and nurses. My gratitude is due Mayor Steele, Dr. Lincoln, Mr. Rumph, and others, for courtesies.

The number of persons employed at Jesup was: Physician, 1; nurses, 10; guards, 42; patrols, 7; census taker, 1; a total of 61. Patrols furnishing a horse received $2.50 per day; guards furnishing their own arms and subsistence received $1.50 per day.

All bedding destroyed to prevent infection was paid for to the satisfaction of the persons concerned.

SOUTH END ST. SIMONS ISLAND.

There are several settlements on St. Simons Island; the hotel and cottages on extreme south end; ocean pier about a mile north on east side of island; St.

Simons Mills about 4 miles north of ocean pier, and Jewtown and Kings back from both the Mills and pier.

The first case on extreme south end occurred in a lady who was last in Brunswick on September 11. She passed six times through the infected district, and spent several hours in getting apparel from her city residence; she sickened on September 20, and after a wonderful struggle, recovered. Her brother sickened on September 24, and died with a typical case on October 6. He was last in Brunswick on September 13, but was in constant attendance on his sister. One other case occurred in the nearest cottage, a total of 6 cases. Another center was at Ocean Pier, resulting in 16 cases and no deaths.

Dr. H. M. Branham served this people with great zeal. On October 9, to secure St. Simons Mills, where sawing lumber and loading vessels were continued throughout the season, with a population of about 500, I ran a guard line across the island to cut off the south end.

On the 10th a lady died at Dr. McCaskill's with suspicious symptoms. During the hurricane of October 12, at great risk, I went over to make an examination if possible. The exposure I suffered during the night and the soaked ground deterred me from disinterring the body, but I discharged the land guard, set a guard near Mewhead Point toward the north end of the island, and left Dr. McCaskill in charge. A total of 15 cases and 1 death were recorded, as at this point there was no exodus of frightened people from St. Simons.

I requested the church and other gatherings to cease for a month, and arranged to prevent effectually the purchase of liquors, which gave unusual quiet to the center of the island for about 6 weeks and perhaps prevented a further spread of the disease.

COMMERCE AND LABOR.

As has been noted, the sprightly town of Jesup instituted public work with the city funds and thus avoided an appeal for relief.

The medical relief given to Jesup was in suppression of the epidemic; the guards were placed for the security and comfort of other places.

I begged the Brunswick relief committee to have public work done and pay for it out of the relief money. There were sufficient chances for the work and had the many idle and anxious laborers had short hours and moderate pay the whole city would have been permanently benefited and the same relief would have been given with fewer reasons for grumbling. It was my policy in employing guards and other help to give places to persons, equal in other respects, who most needed employment.

The shipping commerce of the port was ruined or nearly so by the breaking of the three banks in May and June. The depression of financial panic was worse in effect on the town than the fever. The two fever panics caused most of the shipping agents to either go to safety or hold up business for the season.

One of my first acts was to have the East Tennessee docks, at Pelicanville, 4 miles from Brunswick, protected by guards. In due time loading of large steamers with cotton and phosphate was begun and continued without mishap or alarm, resulting in the disbursement for labor of $22,000.50, which may, without much stretch of imagination, be considered as a contribution to the community.

The marine quarantine was continued with all the care which the Marine-Hospital Service gives to such matters.

I feared the crews of incoming vessels would add to our number of cases. To avoid this I set a guard on every vessel that came to the city wharves. Ties and lumber constitute the exports. The stevedores were required to keep from close contact with the crews; only the masters and stewards were permitted to go ashore in the daytime and no visitors were permitted on board. By this means no cases occurred on any one of the many vessels which loaded. The city received the profits of the shipments and loading and a small contribution from pay of guards. It is in nowise true that the epidemic or the relief measures injured Brunswick's commerce. Doubt and fear did delay business in a measure, but the chief agent was the financial condition of the town.

The six or seven cases of yellow fever among seamen occurred in persons who were in the city before the cordon was put on or those who deserted after being put in the camp train, except the last case and last death.

Loading at St. Simons Mills continued throughout the season without material interruption.

I have reason to congratulate myself on the measures adopted to keep up the shipping interests, and that no vessel became infected. Fortunately petty violations of my rules and some grumbling led to no evil result.

The following are the numbers of persons employed within the Brunswick cordon, with rate of pay in each case:

Sanitary inspectors, 2	$5.00	Messenger, 1	$1.00
Sanitary inspectors, 2	1.50	Assistant superintendent of nurses, 1	2.50
Land guards, 1	3.00	Fumigators, 2	3.00
Land guards, 27	2.00	Fumigators, 19	2.00
Water guards, 1	7.50	Teamsters, 7	2.00
Water guards, 6	2.00	Nurses, 240	1.50
Water guards, 1	1.00	Nurses, 4	5.00
Water guards, 26	2.50	Physicians, 3	8.00
St. Simons guards, 1	2.00	Physicians, 10	6.00
St. Simons guards, 10	1.50	Physicians, cost of buggy, 1	2.50
Ship guards, 38	1.50		
Census takers, 14	2.50		

A total of 421 persons.

No person was paid for time when not actively employed.

Very respectfully,

R. D. MURRAY,
Surgeon Marine-Hospital Service.

SUPERVISING SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

TABULATION OF CASES AND DEATHS FROM YELLOW FEVER IN BRUNSWICK AND VICINITY.

SIR: I have the honor to refer to Bureau letter requesting a tabulation of yellow-fever cases and deaths at Brunswick and vicinity during 1893. Continued illness has prevented me from responding sooner. Some delay is chargeable to physicians who have failed to send me corrected reports. This table may be changed somewhat for good reasons. The Brunswick board of health report would be 57 deaths, including 3 from islands. I exclude 8, 7 of which were due to malarial fever and 1 of rheumatism, as proven by my post-mortem examinations.

I am, very respectfully, your obedient servant.

R. D. MURRAY, *Surgeon M. H. S.*

SUPERVISING SURGEON-GENERAL U. S. MARINE-HOSPITAL SERVICE,
Washington, D. C.

Yellow fever at Brunswick in 1893.

Places.	Cases during—					Deaths during—				
	Aug.	Sept.	Oct	Nov.	Dec	Aug.	Sept.	Oct.	Nov.	Dec.
Brunswick	6	119	771	179	1	2	7	30	6	1
Jekyl Island	0	2	11	0	0	0	0	1	0	0
St. Simons Island	0	7	15	0	0	0	0	1	0	0
St. Simons Mills	0	5	9	0	0	0	0	1	0	0
Detention Camp	0	0	1	1	0	0	0	0	1	0
Jesup	1	8	27	3	0	0	1	2	0	0
Hazelhurst	0	0	1	0	0	0	0	0	0	0

Fort Valley, 1 case recovered in August, Dr. H. M. Branham.
Gardi, 1 case recovered in August, Miss Maud Curry.
Odessa, 1 case recovered in August, Miss Mary Casey.
Atlanta, 2 cases recovered in September, Feiberman and Rotholz.
Longstreet, 1 case recovered in September, J. R. Mason.
Marietta, 1 case recovered in September, Collins.

REPORT OF PASSED ASSISTANT SURG. H. D. GEDDINGS, IN COMMAND OF DETENTION CAMP, NEAR WAYNESVILLE, GA.

SIR: I have the honor to present the following report of the operations of the Detention Camp, near Waynesville, Ga.

The camp was officially opened for the reception of refugees from Brunswick, Ga., on the 18th of September, 1893, and closed by the order of Surg. R. D. Murray, Marine-Hospital Service, permitting the return of all refugees to their homes in Brunswick, Ga., November 30, 1893. Four hundred and thirty-one persons availed themselves of the privileges of the camp, of whom about 225 were white and the remainder black and colored. The site of the camp, selected by Surg. W. H. H. Hutton, was 23 miles west of Brunswick, immediately upon and on the south side of the Brunswick and Western Railway, and upon an eminence about 25 feet above the general level of the surrounding country, which is generally swampy, and within a mile of the margin of what is locally known as the Buffalo Swamp. As is usual in this section, the elevation was covered with a dense growth of yellow pine, scrub oak and black gum trees. The soil was a gray sandy loam, overlying a stratum of yellow clay, and the natural drainage of the site in all directions was good.

On my arrival I found that under direction of Surg. Hutton an area 200 feet square had been cleared of trees and undergrowth, and at the four angles of this square rough but substantial buildings had been erected, which were used respectively as kitchen, white and colored dining rooms, guardroom, quartermaster's storeroom, executive office and telegraph office, and commissary. A depot and baggage room were provided at the railway. Along the line connecting the buildings, at intervals of 12 feet, were placed wall tents, 12 by 14 feet, with flies, and subsequently further rows of tents were pitched behind these and opening in streets 14 feet wide. All tents were provided with substantial floors, raised 6 inches above the ground, and the following equipment was provided:

For each inmate 1 spring wire bottomed cot, 1 cotton mattress, 1 hair pillow, 2 sheets, 1 pillowcase, and for each tent, 2 tin washbowls, 2 tin cups, and 2 wooden chairs. Remarkable ingenuity was displayed by the inmates in construction of articles of furniture from packing cases, waste lumber, etc. The tents proved of good quality in service and quite comfortable in all weather. It is suggested, however, that any future tents be constructed with a wall, 18 inches or 2 feet higher, and of 1 foot greater pitch. A hospital establishment of two buildings was provided at a distance of one-half mile from the camp.

The following routine was observed, the calls being given by the bugle: 5:30 a. m., reveille and attendants' breakfast; 6 a. m., breakfast; 8 a. m., sick call; 12 m., dinner; 4 p. m., sick call; 5 p. m., supper; sunset, retreat, and call to quarters; 9 p. m., tattoo; 9:15 p. m., taps (extinguish lights).

The meals were substantial, abundant, and as varied as possible. In all cases women and children were served at the first table, and the races were served in separate dining rooms. The following rules were announced, and seemed to work well in practice:

1. At reveille all inmates will rise and prepare for breakfast.

2. All quarters must be clean, floors swept, and beds made up before first sick call.

3. Meals will be served in the dining rooms only, and at stated hours, and no meals shall be carried from the dining room to any quarters, except upon the written order of the medical officer, renewed from day to day.

4. At sick calls all inmates will repair to their quarters, and be there visited and inspected by the medical officer, who will prescribe and advise as he deems best.

5. All suspicious cases of disease shall be isolated at once and until such time as their nature may be determined.

6. All cases of infectious disease will be treated only in the hospital provided for the purpose.

7. No baggage from infected localities shall be brought into camp until disinfected by such process as may be directed, and only such wearing apparel as may be deemed absolutely necessary will be brought into camp after the disinfecting process.

8. All wearing apparel shall be a second time disinfected before discharge from camp.

9. Any person taken ill between the two sick calls shall notify the nearest guard, who will in turn immediately notify the medical officer.

10. Guards are enjoined by their vigilance to prevent the commission of any nuisance near any quarters; should such nuisance be discovered. the inmates of the nearest quarters will be required to police the same under the supervision of the guard, who will make report of the fact.

11. Inmates will confine themselves to the inner lines of the camp after retreat (sunset) call.

12. While innocent enjoyment will be encouraged, the strictest propriety of conduct will be demanded and enforced.

The discipline of the camp was in the main good throughout. But two confinements for misbehavior were required during the entire duration of the camp.

All baggage was submitted to steam disinfection upon arrival at and departure from camp. The apparatus used was devised by Surg. H. R. Carter, Marine-Hospital Service, and constructed in a baggage car, the steam being supplied by a locomotive.

In addition to other duties, nearly 1,600 cars, boxes and flats, were disinfected for the Brunswick and Western Railway, sulphur fumigation being used for boxes and drenching with acid solution of bichloride of mercury (1-800) for flat cars. This disinfection of cars enabled the traffic into Brunswick to be carried on with a minimum of delay and hardship.

Two cases of yellow fever occurred among the inmates of the camp. One resulted in recovery; one in death. Both cases occurred in the persons of sailors who had arrived in Brunswick on vessels trading there, and both would seem to show a period of incubation of at least five days, thus justifying our detention of ten days.

RECOMMENDATIONS.

Experience having shown certain things to be desirable, I would respectfully recommend—

1. That a disinfecting car be built and kept equipped for service in epidemics. The 9-foot chamber, built by the Kensington Engine Works, of Philadelphia, for this service, could be easily erected on a specially constructed car, and would prove more efficient in practice than extemporized apparatus. Another car might be fitted with apparatus for sulphur and bichloride of mercury disinfection, and a tank car, similar to those used for transporting petroleum, would complete a train that would be always ready for emergencies in any part of the country. Steam could be supplied if desired by a locomotive hired for the purpose.

2. That while experience has demonstrated the usefulness of tents, those provided in the future should be higher in the pitch and in the wall, and that some provision be made for heating them in severe weather. It is a question in my mind whether the Sibley conical tent, made with a higher wall, would not be preferable on this account to the square tent.

3. That in future epidemics of yellow fever apparatus should be provided and observations made into temperature, temperature maximum and minimum, barometric pressure, dew-point, direction and velocity of wind, precipitation, and ozone.

4. That apparatus, instruments, and reagents be provided for investigation into the etiology of yellow fever in future epidemics.

Very respectfully,
H. D. GEDDINGS,
P. A. Surgeon, Marine-Hospital Service.

SUPERVISING SURGEON-GENERAL U. S. MARINE-HOSPITAL SERVICE,
Washington, D. C.

REPORT OF SURG. H. R. CARTER ON TRAIN-INSPECTION SERVICE AND SANITARY WORK OUTSIDE OF THE INFECTED PLACES DURING THE YELLOW-FEVER EPIDEMIC OF 1893 AT BRUNSWICK, GA.

SIR: In obedience to verbal orders of October 4, 1893, to take charge of the sanitary work outside of the infected places, I left Washington that day en route to Waynesville, Ga. I stopped in Savannah part of October 5 at the invitation of the sanitary council of that city to confer with them and to learn what measures they had taken for the protection of that place. Thence I proceeded to the camp near Waynesville and met Surg. Murray, and then to Waycross. Waycross, from its position, was chosen as headquarters, but it was rather a place through which I frequently passed than one at which any considerable portion of my time was spent.

The condition of things was as follows: At every place I visited grave apprehension was felt at the continued spread of the fever, and from what I heard this feeling was general over southeast Georgia.

All incorporated towns had taken measures to prevent the introduction within their limits of those who had been exposed to infection.

In some these measures were well conceived and carefully carried out; in others the combination of earnestness and inefficiency was almost pathetic. And the sanitary condition at this time was by no means reassuring. Jesup and the Jesup refugees were the key to the situation. Brunswick was fairly depopulated and well under guard, and from Brunswick there seemed a minimum of risk. The fugitives from Jesup, leaving from October 1 to 3, were scattered to the number of some hundreds in the neighboring country. As fever was reported to have existed at Jesup for some weeks before it was announced, and as six cases were reported there on the 3d, with a white population of only 550, the apprehension was that the place was fairly well infected, and that there would be some development of the disease among these refugees. Many of these people had gone into the country, and were living with friends or by themselves in isolated farmhouses. But Jesup being essentially a railroad town, a large number had naturally gone or were attempting to go to the stations or towns on the lines of the railways leading out of Jesup, where they had acquaintances who would assist them in getting work, etc.

These places were, many of them, low and swampy and nearly all were or had been the site of sawmills, and from previous experience the old sawdust piles were judged peculiarly favorable to the spread of yellow fever. Also, it was believed that these railroad people would ultimately attempt to make their way into the large cities.

From those who had gone into the country but little danger was apprehended, as fever developing among them could probably be successfully isolated. The establishment of other foci of infection on the line of the railroad, however, would have greatly complicated the situation and added to the danger by the flight of their floating population, who would naturally seek the most accessible town.

It seemed imperative then to (1) prevent those who had presumably been exposed to infection stopping at places on the line of the railroad, at least within the territory believed liable to infection; (2) to keep all such people under sanitary supervision and if fever developed among them to take such measures as were necessary and possible to prevent its spread.

For the first, a man well acquainted with the Jesup people visited every railroad station between Jacksonville and Savannah, and up the Brunswick and Western and the East Tennessee, Virginia and Georgia for a long distance to find out at which ones these people were staying or expected to come. I followed him up and moved all such people off the line of the railroad back into the country. It was understood by the railroad officials, and they had so agreed, that trains would not stop at stations at which "suspects" were residing. In most instances the threat of this, with a reasonable amount of persuasion and argument, sufficed to accomplish the end had in view, and in the few instances in which it was enforced a state of public feeling among the neighbors was produced which resulted in the prompt removal of the refugees and a resumption of the business of the community.

This work was difficult and delicate. It seemed absolutely necessary for the good of the community, and yet it was desired to cause the least possible individual hardship. Fortunately, as soon as the need for this action was appreciated, the residents at many of the railroad stations which I had not had time to visit, forbade suspects to come or remain amongst them, and the work of freeing the railroads from refugees was practically accomplished. Frequent inspections were made to see that they kept free.

The inspection of the groups scattered in the country was, in the main, easily carried out. They were "located" by various means and visited when possible. They seemed very willing to report any sickness among themselves, which willingness was fully shared by their neighbors. Indeed, the health of the Jesup refugees seemed a matter of public interest in their neighborhoods, and news of illness among them generally reached me from many sources simultaneously, and as soon as the mails of the locality and my uncertain movements would allow. The knowledge of the location of nearly all of the Jesup refugees, and to a considerable extent, of the Brunswick refugees, who were in southeast Georgia, was of great assistance in investigating reports of suspicious cases, which at one time were very common.

In the very beginning (October 6) with the work described above a general train inspection was organized.

Inspectors had been placed on incoming trains or to meet such trains at the depot by Savannah and, I believe, Macon since September 13 and by all towns in southeast Georgia since the fever was declared in Jesup. In general only the train coming from the direction of the infected district was inspected. The usual method was to stop the train at or near the city limit long enough for the inspector to satisfy himself that the passengers for his town could or could not get off there. Those whom he declined to pass were either put off at this place or carried through the town; their further disposition to be determined by the conductor and themselves. The inspector took no cognizance of such as wished to pass through to points beyond, although they could come back on the next train without inspection, and in some cases are known to have done so. There were many variations in method, however. Way Cross inspected trains entering from all directions. Savannah did the same and made no distinction between those who would remain in that city and those who would pass through. The inspectors of this city also boarded the Savannah, Florida and Western trains coming up through Jesup far down the road, and thus had time to inspect their passengers at leisure without detaining the train. The trains on this road were carefully inspected.

The evidence demanded of a passenger was, in general, the health certificate, i. e., a certificate of residence for not less than ten days in localities not infected with yellow fever, signed by someone authorized to use a seal or by a physician. Occasionally other evidence was accepted, but in general the "health certificate" was required of all passengers stopping in these towns.

This brief account of the inspections of the different towns seems necessary to rightly understand the general inspection service as organized by the U. S. Marine-Hospital Service. This was put on to protect all places on the line of the railroads, unincorporated as well as incorporated. The problem was to make it efficient and to cause as little inconvenience to passengers as possible.

Sanitary inspectors traveled on every train carrying passengers between Way Cross and Savannah, Way Cross and Jacksonville, Way Cross and Waynesville, Way Cross and Tifton, and from Way Cross and Odum to and from Godwinsville, a place on the East Tennessee, Virginia and Georgia Railroad, believed to be sufficiently distant from Jesup. In all fifteen inspectors were employed, and Way Cross was the center of the system. As part of the inspection service sanitary guards were stationed at points of sanitary importance, viz: Dales Mill, Odum, Coal Shute, Doctortown, and Burroughs Station. Also, a couple of tents and the necessary furniture were provided at Way Cross to furnish temporary accommodations to any whom it might be necessary to detain. Savannah had a similar plan at Southover. The inspectors were chosen for their acquaintance with the people of Jesup and Brunswick, with whom they would naturally have to deal, but were residents of the towns which were to be protected, and mainly from Way Cross. They were all men of intelligence, and, after some unsuitable ones were weeded out, were a very efficient body of inspectors. Their work was inspected by Assistant Surg. Nydegger and myself at frequent intervals during the epidemic. In addition each inspector made a daily report in detail—in tabulated form—of his work, which also enabled us to form a fair idea of what he was doing.

The orders of these inspectors were, if possible, to allow no one to board a train in their run without a health certificate, but if one did so board, and the examination of other data presented by him was unsatisfactory, or if the certificate was not satisfactory, to turn him over to the health authority, if such existed, at his destination. If he, with certificate or without, was judged to have been recently exposed to infection, he was to be carried on to the camp at Way Cross; and if on inquiry this opinion was confirmed, he was given the option of returning where he came from or going to the camp at Waynesville.

No suspect was to be allowed to go through Way Cross or beyond the end of the inspector's district.

Much pains was taken to give travelers no unnecessary annoyance, and as the inspectors rode continuously on the train there was no stopping of trains. The service was a difficult one to perform satisfactorily, (1) because some certificates were given without any attempt being made to verify the data certified to, and in some instances with an absolute knowledge of its falsity. I have proof that at one station, which, however, did not lie in the district which we inspected, printed certificates were on sale at a very moderate figure, ready signed, the purchaser filling in his own name. Two persons immediately from the infected places, with certificates correct in every particular, were stopped by my inspectors en route to Way Cross a few days after they began their functions. (2) A number of people, especially at first, who had not been exposed to infection, would, through lack of information or inadvertence, neglect to provide themselves with certificates. Later no one ventured to board without a certificate.

A certificate thus not being proof that a passenger had not been exposed to infection, nor the absence of one a specially suspicious circumstance, the inspectors were to a large extent thrown on their own judgment in examining passengers and the data which the latter could submit to them, and having abundance of time on the train, and becoming quite expert, did, I believe, fairly well.

In spite of what I have said of the worthlessness of certain certificates the inspection service was of much sanitary value, which was not to be measured by the number of people forbidden to proceed. The knowledge that inspectors were on every train prevented the class of people who would have been stopped by them from attempting to travel. They were especially a protection to the smaller places. Commercially they were of even greater utility. The methods in vogue for the municipal inspections involved a delay of the train until the quarantine officer had examined the certificate and other data presented by the passenger. I was on a train which lost by this means fourteen minutes between Jesup and Way Cross. In addition, the time being short, not a few who could have shown that they had not resided in any suspicious locality had time enough been given, would be refused permission to stop and be put to considerable inconvenience.

After our inspectors began their duties their statement to a quarantine officer that a passenger had or had not proper papers was sufficient, and the train passed on, and the passenger if allowed to stop was examined (or not examined) afterwards. Sitting down by passengers and patiently and intelligently examining into the evidence presented, mainly to establish residence, and helping them (generally women) to obtain such evidence by telegraph or otherwise, enabled many to proceed to their destination who would otherwise have been compelled to return home, and occasionally by this means the holder of a fraudulent certificate would be discovered.

At the request of the Florida health officer a certificate of inspection, with a personal description of the passenger, was by our inspectors issued to such passengers as entered Florida, which, it seems, facilitated his work and prevented delay at St. Mary's.

A better service could be organized than we had, but it was of very considerable value. Properly developed it is a valuable agent in land quarantine, and can be used so as to make no disturbance of passenger traffic.

Sanitary guards were placed, as before stated, at certain points on the railroads.

Odum was the point on the East Tennessee, Virginia and Georgia where the transfer was made of cars from Dock Junction, the district between Jesup and Brunswick and points north, the train crew from the south not going beyond Odum.

Coal Shute and Dales Mill were the two termini of the transfer between the East Tennessee, Virginia and Georgia and Savannah, Florida and Western systems, this transfer being made for freight cars by a train crew which lived in Jesup, and were thus presumably exposed to infection, although some pains were taken to keep them free from it.

These three points, then, were all somewhat exposed to infection, and it was exceedingly important to keep them, above all other places on the road, free from infection, as otherwise they could not be used as places of transfer, and there were no other places which could be so well used. On keeping these points healthy depended the uninterrupted continuation of the business of this road with points east and south.

It was on this account that a guard was placed at each place to see that the transfer was properly conducted, i. e., with a minimum risk of conveying infection. In addition, these places received much personal inspection from Dr. Nydegger and myself. I spent more time at these three places than at any others, not excepting Way Cross, during the epidemic. They were visited by one of us about six times a week. There was less need of a guard at Doctortown, but it was close to Jesup, about 4 miles, and quite a colony of refugees were in the immediate neighborhood who were greatly feared by the few people who lived there. Here was the only bridge over the Altamaha for about 100 miles, and hence sought by people passing up from the country between Jesup and Brunswick, the sanitary history of which was regarded as doubtful. If infected (it was a damp, low place on the bank of the Altamaha) it would have conveyed considerable risk to the country along the river, it being a steamboat terminus and a regular tying-up place for raftsmen en route to Darien. Similar reasons existed for the guard at Burroughs. It was a congregating point for all manner of people coming up the Florida Central and Pacific road, then building, from the country adjacent to Brunswick. These people came on construction trains, etc., to this point, and took trains for Charleston, Augusta, etc., or walked into Savannah.

Almost as soon as Way Cross was reached, indeed within an hour thereafter, another and quite an important duty began to develop, viz, the investigation of cases of sickness reported as yellow fever, or as suspected of being yellow fever. The first of these was in a railroad employé, immediately from Jesup, sick at Johnston Station, a small place on the Savannah, Florida and Western Railroad.

Fortunately the first cases investigated, which had excited much alarm and caused quarantine of the localities, were clearly not yellow fever, and the announcement to the contrary was very acceptable to the residents of the suspected localities. This led to requests to investigate suspicious sickness from the localities in which it occurred, for the purpose of removing suspicion and its consequent inconveniences, as well as from neighboring places which wanted the matter determined for their own protection against infection.

In all, fourteen places where yellow fever, or disease of a suspicious nature, was reported to exist, were investigated, four autopsies made, and only one case of yellow fever found. This was in the person of a Jesup refugee, in the country out from Hazlehurst, who was isolated and the premises disinfected. This man had rented a house in Hazlehurst, a town on the East Tennessee, Virginia and Georgia Railroad, intending to stay there, but was forbidden to do so and moved into the country. Whether the disease would have spread had he developed it in Hazlehurst is, of course, undetermined. The place is not very wet, but has a large sawmill.

Obviously the sanitary value of this work was not great, but it relieved thirteen places from the suspicion of being infected with yellow fever. In five of them the announcement had been definitely made, with the consequent quarantine and disturbance of traffic.

This part of the work involved at times considerable personal labor and some hardships, but as it was generally practicable to combine it with inspection of groups of refugees, and of the work done by the train inspectors and sanitary guards, less time was taken by it than may be imagined.

The section between Jesup and Brunswick and between Waynesville and Brunswick was not considered by me as a part of my territory, and hence I did not investigate cases reported as occurring within those limits. This probably was an error, and I so consider it, but this district had been quarantined against by all the adjoining counties and towns, contained a number of Brunswick refugees, and almost certainly had cases of fever at a number of places, and to treat it as a sort of neutral ground was probably safe practice. At any rate, had fever been announced no difference had been made in the treatment of these places, and had the presence of fever been denied pratique from this district would scarcely have been taken by any town in southeast Georgia, nor would I have felt justified in demanding it. I considered them as under Surg. Murray's immediate supervision.

On November 9 I went to Jesup and began the disinfection of that place. All bedding and fabrics which had been in any house in which yellow fever had been reported were disinfected by steam. The houses, as far as practicable, were thrown open and exposed to the fresh air. The weather, fortunately, was very dry.

Quarantine was raised at Jesup on November 17, after a good frost, there being one case of yellow fever, a returned refugee, in town. The house in which this case was sick was kept under guard and disinfected (the bedding and fabrics) before I left Jesup for Brunswick, November 30, to report to Surg. Murray.

One thing was noteworthy and assisted markedly in such success as was attained in the above-described work. It was the general reasonableness and good faith of those with whom I had to deal. The refugees from Jesup were desirous not to carry infection or even the inconveniences of quarantine to other communities. They were willing to put themselves to certain inconveniences and to forego plans formed rather than impose trouble on others. This was within limits, and only after being convinced of the reasonableness of the restrictions imposed, for a people less amenable to any attempt at arbitrary compulsion I have never seen.

We had also the cooperation of all the local health and civic authorities and railroad officials. The private people in the country were exceedingly friendly, gave information freely, and seemed to appreciate the efforts to limit the extension of the fever and the pains taken to disturb business as little as possible.

In Jesup especially good feeling and hearty cooperation of the whole community were especially marked, and indeed the whole course of this little place, its steadfastness and self-reliance when help could have been had for the asking, is worthy of all commendation.

Very respectfully, H. R. CARTER,
Surgeon United States Marine-Hospital Service.

SUPERVISING SURGEON-GENERAL U. S. MARINE-HOSPITAL SERVICE,
Washington, D. C.

RULES FOR GOVERNMENT OF TRAIN INSPECTORS.

Inspectors will allow no one without a certificate to board a train between Way Cross and Savannah.

If certificate can be examined before boarding, without detention to train, it must be done, and those who hold unsatisfactory certificates will not be allowed to board.

After boarding, the certificate and the person must be carefully examined, and the inspector assure himself that the passenger is not recently from Jesup or any infected locality.

If the passenger is known to be a recent resident of Jesup or any infected locality, or to have been in such place during the past two weeks, he will not be allowed to board, even if he has a certificate.

If, after boarding, either the certificate or the examination of passengers is not satisfactory, the passenger will be turned over to the city authorities at Way

Cross or Savannah, or at the place where he desires to stop, if between these places, and the facts noted and reported.

A record will be kept of the names of all passengers inspected, name of signer of certificate, his rank, date of inspection, date of certificate, place of boarding train, where passenger is bound, and what disposition is made of him, whether passed or turned over to local authorities; also any other facts worth notice.

Inspectors will aid local quarantine authorities in any way in their power consistent with their duties, and give them any information, and obey all local quarantine regulations.

Notes of Necropsies made by Surg. R. D. Murray at Brunswick.

I submit fifteen reports of post-mortem examinations made in Brunswick. I regret our inability to make more, but these were made under many disadvantages and owing to other and pressing duties of reporters, operators, and on-lookers haste was always insisted on. Those who care will, I hope, find something to dwell upon in the different reports. It is sometimes difficult to tell the difference between yellow and other fevers in life; the milder the case the greater the difficulty, but after death the great differences may be observed by anyone who knows colors. This series of necropsies has been of much importance to me, as heretofore I have not had many opportunities to make examinations in malarial deaths and have never enjoyed the help and criticism of others while examining a yellow-fever corpse. It was novel as well as interesting to examine both on the same day or the other before memory of the first had faded.

No. 1.

J. H. B.; white; German; æt. 35. Died October 21. Post-mortem examination a. m. October 22, 1893.

Reporter, A. R. Booth; operator, R. D. Murray; present, J. P. Wall, H. Burford, R. E. L. Burford, and J. A. Dunwoody. Reported as yellow fever October 18.

History.—Patient a waterman supplying water to vessels. Sought to keep out of the city; violently ill for 3 or 4 days. Never had black vomiting. Seen by one physician besides his attendant who made a serious prognosis; had previously had malarial fever.

External appearances: Some pale froth from mouth and nostrils; body of a strong, muscular man, not emaciated. *Rigor mortis* marked, pupils dilated, conjunctivae pearly, skin white, not jaundiced.

Incised abdominal walls: Blood from first cut. Layer of subcutaneous fat of ½ to ¾ inch in thickness, faintly yellow. In cavity was found one-half pint or so of serum and all parts of intestines and peritoneum were moist. (Here Dr. Murray announced that the case could not be yellow fever.)

Stomach: Coat lined with a thin, yellow liquid of color and consistence of thin, mustard paste; curd of milk size of pecan nut near pylorus. Mucous membrane congested, diffused over whole area. No broken spots in the dark mottling, no sign of blood or dark flakes. Fecal odor but not particularly offensive.

Small intestines. Evidences of congestion from duodenum, increasing in degree downward to ileum where it was very marked; here the capillary unions on free edge of gut were well marked. Contents of intestine consisted of same fluid as in stomach, increasing in consistency downward; small curd of milk near ileocecal valve. No enlargement of Peyer's patches.

Colon: Contents same as above except somewhat darker and thicker. No flakes of blood or mucus, no skins of beans or shreds of meat found in entire tract. Liver enlarged, edges rounded, dark walnut in color, bloody on section, friable superiorly, nearly pultaceous posteriorly. Vessels full of blood. Gall bladder full to bursting of thick, brownish-black, iridescent, tarry bile. Adjacent tissues tinged with bile.

Spleen much enlarged, shape assumes globe form, dark-blue color outside; blue-black on section. Pultaceous substance oozes from cut surface.

Pancreas presents no evidence of change.

Kidneys enlarged, bloody, enveloped in fat. Color, reddish blue. Capsule not detachable without tearing out tissue. Cortical and medullary substance clearly defined, former pale, latter dark brown; no appearance of fat in tissue.

Bladder contained one pint of dark urine, subsequently shown to be free from albumen.

Diagnosis.—Malarial fever; agreed to by all present who each expressed regret that the case was not one of yellow fever as expected. (It was learned that this case was treated by the peddler of a fetich toy called "Oxydonor Victory," and when the announcement was made on the street that the case was malarial fever some talk was indulged in and some advertising resorted to. It was farthest from my desire to give notoriety to irregulars either by condemnation of their wickedness or by replies in the public press.)

No. 2.

L. H.; octoroon; female; aged 22 years. Died October 23. Post-mortem examination five hours after death.

Reporter, A. R. Booth; operator, R. D. Murray. Nearly whole corps of physicians present. Reported to board of health as yellow fever October 16, 1893.

No history except as above, and that there was no black vomiting, but there was suppression.

External appearance.—Body not much emaciated, had been well nourished; body warm, *rigor mortis* marked, skin deeper yellow hue than her normal, with some purple mottling, no discharges from mouth or nostrils.

Incised abdomen bloodless, fat bloodless, yellowish in color. No fluid in cavity, no fecal odor; intestines pale, dry, and sticky. Stomach contains small quantity, one-half ounce black vomit, walls thickened, mucous membrane soft, easily rubbed off with finger. Congestive areas at cardiac end had stellate arrangement, toward pylorus they were more general and diffused till at same the whole surface was dark and confluent.

Duodenum from pylorus down about 2 feet contained black vomit; external view dark bluish-black in color, blood vessels enlarged and easily traced around free surface of gut, inside dark mottled ecchymoses; membrane soft, no free or red blood visible, all dark or black.

Small intestines externally appeared glistening and pale; inside contents dark at upper end, fading to gray and lighter below. Mesenteric veins distended with black blood, but gut capillaries not prominent except at upper part of jejunum.

Colon gassy; contains grayish-brown feces. Liver reddish, pale-yellow hue, not contracted, edges normal (absence of any fat in tissue shown by subsequent tests). Section showed mottling of same color.

Gall bladder half full thin, tar-colored fluid. Spleen slightly enlarged, normal color and shape, tissue firm, striae plain.

Pancreas, no change observable.

Kidneys enlarged; capsules peeled off easily, leaving smooth, bloodless surface. Incised, evidence of fatty degeneration and blood stasis. Line separating the cortical from the medullary portions absent, giving the cut surface a smooth appearance. Some free blood in pelvis.

Bladder contained 10 ounces dark-colored urine, albuminous. Uterus and appendages normal. Some arguments as to the reddish liver, the ecchymosis of cardiac end of stomach, and the degenerative signs in kidneys resulted.

This case serves to show in some measure the effects of alcohol as a predestinator in yellow fever.

Diagnosis confirmed.

No. 3.

H. L.; white; foreigner; aged 33 years. Died October 23. Post-mortem examination six hours after death. Reporter and operator, R. D. Murray. Reported as yellow fever, October 13, 1893.

History.—Sickened October 11; was self-treated for two days; from beginning, was a fractious, nervous, and self-willed patient. Suffered with black vomiting for five days; was delirious much of the time for a week; suppression for two days before death. Habits in life, abstemious. If he could have been controlled and soothed there was all chance for his recovery.

External appearance: Body emaciated; black vomit on chin and cheeks, dark froth from mouth and nose. Color, intense yellow all over except neck and flexures of joints, where were purple mottlings.

Abdomen opened: Subcutaneous fat granular in appearance and very yellow; no blood; no fecal but a strong cadaveric odor; cavity dry; bowels adhere to each other and to peritoneum; omentum dark lined and yellowish.

Stomach: Walls thickened, membrane soft and detachable; contains small quantity black vomit. Cardiac end pale from larger diameter to pylorus, mottled with black, increasing to general dark discoloration at lower end; no ecchymosis at larger end.

Duodenum: Filled with black vomit, tissue nearly black from congestion and staining of fluid; anastomoses of vessels complete and for 4 to 6 feet into jejunum.

Small intestines: Dull, dark in color, except lower half of ileum, which is bluish first and white lower down; contains black vomit to middle of jejunum, and grayish brown feces lower down and into colon.

Colon gassy, some firm feces in rectum.

Liver much contracted, not filling space assigned to it. Edges sharp, firm, finely serrated. No oil on knife; no sign of any fatty change. Tan or dark boxwood color externally and on section tissue firm.

Gall bladder one-fourth full of brown liquid.

Spleen normal in size, shape, and color.

Kidneys: Not enlarged; capsules adherent, tearing out tissue when removed. Line dividing cortex from medulla distinct. Cortex pale; medulla light brown; some blood; no blood in pelves.

Bladder one-half full dark amber fluid.

Specimens from this case sent for examination.

Diagnosis confirmed.

No. 4.

G. S.; white; American: æt., 25. Reported October 10, as yellow fever. Died October 24, 1894. Post-mortem examination twelve hours after death.

Reporter, H. Burford; operator, R. D. Murray. In presence of whole corps of physicians.

Previously ill with malarial fever before taking yellow fever. Treated at city hospital.

Had all signs of yellow fever, including black vomiting; suppression at one time; finally died from exhaustion; his mental faculties remaining clear to the last.

External appearance: Body, deep dark yellow; much emaciated; eyes yellow. On section no blood, thin layer of fat is deep yellow.

Abdominal cavity dry; intestines dry and dark hued above, yellowish below.

Stomach half full of black vomit; ecchymotic spots in larger end, general mottling toward pylorus; membranes soft and stained black.

Duodenum filled with black vomit; reticulations of capillaries complete, giving gut a black appearance; jejunum and ileum contain dark, tarry fluid above, grayish below. Colon empty, except grayish, pasty fluid and some gas.

Liver, boxwood color generally mottled with light walnut color; bloodless; friable; no fat on knife; vessels empty.

Gall bladder about one-fourth full of bile.

Spleen, slightly enlarged; deep bluish slate color; somewhat soft between fibrous tissue.

Kidneys bloodless, yellowish tinge; cortex and medulla distinct; dark blood in pelves.

Neither is perceptibly enlarged; no fat on knife. Diagnosis confirmed.

No. 5.

J. B. W.; colored; male; æt 32. Died October 26. Post-mortem examination eight hours after death.

Reported October 18 as yellow fever, for which he was treated; had no black vomiting. Necropsy in presence of nearly the whole corps of physicians. Reporter, H. Burford; operator, R. D. Murray.

Color of skin, dark walnut, black octoroon, *rigor mortis*, well marked; body moderately emaciated; conjunctivæ yellowish, not jaundiced; pupils dilated. Some blood adheres to knife on making abdominal incisions.

Stomach: Walls thickened; cavity empty, except of gas and pale flakes of mucus; some small ecchymotic spots scattered over surface of mucous membrane, most at cardiac orifice, but continuing to pylorus.

Intestines: Glistening, moist, some pale fluid in lower part of abdomen.

Duodenum not congested; contains layer of brownish fecal matter, as do the jejunum and ileum. Fecal odor; colon contains gas and dark-brown feces.

Liver much enlarged, twice natural size; light walnut color externally, dark olive green on section; no mottling at all; no yellow color anywhere. Entire organ bloody and friable.

Gall bladder distended with thick tarry bile, which has stained under surface of liver and adjacent structures.

Spleen enlarged, full globular, blue black in color, pultaceous.

Pancreas shows no change.

Kidneys somewhat enlarged, pale, bloodless; capsules loose, substance apparently granular; line between cortex and medulla indistinct; no blood in pelvis.

Bladder distended with amber urine.

Other organs not examined.

Cause of death—Malarial fever; agreed to by all except attending physician.

No. 6.

M. A.; colored; Female, æt. 12½ years. Died October 28. Post-mortem examination ten hours after death.

Reported as yellow fever October 23, 1894. In presence of nearly all the physicians. Reporter, R. E. L. Burford; operator, R. D. Murray.

History.—Sick for two or three weeks with high fever, frequent vomiting, not black; could not take food.

External appearance: Child, almost black; much emaciated; no froth at mouth or nostrils.

Section: No yellowness of subcutaneous fat; no blood on knife.

Stomach contains grayish fluid. Cardiac orifice surrounded by ecchymotic spots like stars; other parts of stomach show no congestion or infarctions; fecal odor.

Small intestines moist, pearly white, and glistening; contain grayish and light-brown liquid and gas. The anastomosis of mesenteric veins shows well, but the blood is red and does not extend around the gut; particularly noticeable in duodenum.

Rectum contains grayish brown feces.

Liver dark walnut color; enlarged, congested, bloody; edges rounded; tissue friable, easily broken with fingers; posterior part very soft.

Spleen more than twice normal size; dark-blue; edges rounded, pultaceous, darker on section.

Kidneys enlarged, congested; capsules detachable; cortex and medulla distinct, one pale, other dark.

Bladder full of clear amber urine.

Diagnosis.—Malarial fever; admitted by all present.

No. 7.

A. H.; white female; American; aged 35 years. Died October 28, 1893. Post-mortem examination eight hours after death.

Reporter, R. E. L. Burford; operator, R. D. Murray. In presence of nearly all the physicians. Reported as yellow fever October 25.

No history in the case except that the woman presented symptoms of yellow fever.

External appearances: No emaciation, no froth from mouth or nostrils, no yellowness of skin or conjunctivæ; pupils dilated.

Section: Nearly two inches of fat over abdomen; knife bloody. Intestines moist, but no free fluid in abdomen. Fecal odor.

Stomach contains dark yellow thick fluid, congested with ecchymotic stars around cardiac orifice and in large end; major portion of stomach free from hemorrhagic mottling or infarctions and so to pylorus.

Duodenum contains the same fluid as the stomach; the capillary anastomosis is not complete and the blood is reddish, not black.

Small intestine empty, but lined throughout with a fluid like mustard paste in color and consistence, lighter than in stomach. The mesenteric veins bright and full, but the capillaries of gut are not prominent.

Colon empty, except of gas and the paste referred to, but color darker; still darker in rectum, with more consistence.

Liver much enlarged, edges rounded, dark walnut color, no mottling, very friable throughout and posteriorly almost like a poultice.

Gall bladder distended to the utmost with black, iridescent, thick bile, staining all adjacent organs. A spoonful of this would give bile color to a barrel of water and a little was hard to wash off the hands.

Spleen much enlarged, shape quite globular, color dark blue outside; blue-black on section, soft as mush. Can not be raised by its own tissue.

Kidneys enveloped in fat, congested, capsules loose. Cortex and medulla distinct with noticeable line of separation; no fat and no blood in pelves.

Bladder empty.

Generative organs: No sign of disease apparent.

Diagnosis.—Malarial fever; concurred in by all except the attending physician.

No. 8.

X. B. O.; white; American; aged 30. Died October 30. Post-mortem examination October 31, twenty-four hours after death.

Reporter, R. E. L. Burford; operator, R. D. Murray. Reported as yellow fever September 29, and as recovered October 24.

History.—Deliberately caught gonorrhea in order to avoid or forestall an attack of yellow fever. After a varying experience with the latter he recovered and was discharged, but the other germs took charge again and in a week he died from malnutrition.

Death certified as rheumatism.

External appearances: Body much emaciated; no yellowness of skin or conjunctivæ; wrists, knees, and ankles puffed and wrinkled; skin discolored over all of them.

Section: No blood on knife; subcutaneous fat not yellowed. Omentum vessels filled with dark blood, which gives a dark tinge to whole organ. Cadaveric odor. Bowels moist, two or three ounces of pale fluid in abdomen.

Stomach: Pale and glistening externally, mucous coat pale and thickened, empty, no mottling or ecchymosis at all. Inner surface covered with gray-yellow mucus.

Liver: Pale, walnut color; edges not sharp, mottled, pale and dark walnut on section; no fatty degeneration shown by tests. Gall bladder half full of bile. Except for lack of blood, liver seemed to be normal.

Small intestines: Upper portion congested at mesentery, pale and glistening on external surface; contained grayish-yellow and brownish pasty liquid. Colon contained same, of more consistence. An almost bloodless body.

Spleen: Enlarged, congested, dark blue outside, darker inside; fibrous tissue apparent.

Kidneys: Enlarged, congested, granular, capsule easily detatchable.

Lungs: Hypostatic congestion in both; most dependent portions would sink in water. No cavities or adhesions.

Heart: Pale, small, fibrous, no clots in cavities; tissue did not look like muscle; no sign of fatty degeneration.

Diagnosis.—Exhaustion from gonorrheal rheumatism, concurred in by all present.

No. 9.

J. H.; Chinaman; aged 46 years. Died November 3 at 9 a. m. Post-mortem examination six hours after.

Reporter, C. Faget; operator, R. D. Murray. In presence of nearly whole corps.

Sickened night of October 29 with bad chill; total suppression of urine for two days; no black vomiting. Not reported to board of health. Death certified as "consumption."

External appearance: No *rigor mortis*, body warm, skin dark yellow, with purple ecchymoses in dependent parts, neck, arms, and groins. Conjunctivæ, deep yellow.

Abdomen: External, fat and omentum very yellow; no fluid in cavity; intestines dry; no fecal odor.

Stomach contains black vomit, membrane ecchymotic, red spots and mottled, soft and easy to rub off.

Duodenum distended with black vomit, which also fills jejunum and part of ileum; color, dark-olive green; capillary anastomoses complete. Mesenteric anastomoses show perfectly the vessels containing black blood.

Small intestines congested, reticulations of ileum most complete, color externally pale yellowish-green tint, varying from dark mottled above to greenish below.

Liver: Yellow; mottled boxwood and walnut on section, contracted, edges sharp, no fat on knife, tissue firm; gall bladder partly full of greenish-black fluid and gall stones.

Spleen: Slightly enlarged, but shape normal; fibrous tissue apparent, tissue slightly friable.

Kidneys: Congested, blood on knife, yellow spotted on section, cortical and medullary substances distinct. Capsules adherent, tearing out some of tissue; several small pale cysts under capsule in each. Some fat but no blood in pelvis.

Bladder empty.

Lungs not examined.

Diagnosis.—Yellow fever. (Employer subsequently stated Joe had no cough. R. D. M.) Agreed to by all present.

No. 10.

J. H. H.; white; an American; æt. 34. Died 2 a.m., November 8. Post-mortem examination 7 a.m., November 8.

Reporter, A. R. Booth; operator, R. D. Murray. Reported as yellow fever November 3, 1893.

History.—Was attacked November 1 with usual symptoms; progressed well till suppression set in November 6; urine was albuminous on November 4; black vomiting on November 7; had formerly been a hard worker and drinker.

External appearance: Body that of a tanned-faced, thin, lean, hard-muscled man; body hot, slight *rigor mortis*; skin dark yellow, with purplings about neck; stains of black vomit on angles of mouth, neck, and the sheets.

Abdomen incised; bloodless; fat and tissues deep bronzed color; cavity dry throughout; no unpleasant odor. Omentum was shrunken, thin, and retracted to walls of stomach; color of dingy slate.

Stomach: Walls thickened; contained 2 or 3 ounces black vomit; mucous membrane soft and easily rubbed off; at cardiac end a few star-like infarctions; these increase in large diameter until at smaller end they are blended in a general mottled black membrane.

Duodenum filled with black vomit, which continues down to ileum; the duodenal membrane dark, soft; reticulations of vessels complete around gut and for much of jejunum.

Lower intestines had several contracted spaces; near to cæcum contents grayish brown.

Colon empty; some grayish-brown matter and flatus in cæcum and sigmoid flexure, but colon was generally in an empty, contracted condition, looking somewhat like a cane made of a shark's backbone.

Liver evidently shrunken from its former size, but slightly above normal, yet edges firm, sharp, serrated; on upper surface numerous old syphilitic atrophic spots.

Color: Tan mottled with darker.

Section: Dark boxwood mottled, a little blood on knife; free oil globules noticed. (This fat due to antecedent disease and not to the yellow fever. R. D. M.) Gall bladder nearly empty; contents, black grumous bile.

Spleen somewhat oversize, normal in color; tissue firm.

Kidneys enlarged, but retaining proper contour; capsule slips off easily. Incision, cortex pale, medulla dark, some free dark blood; some fat globules seen on knife. Line between two portions nearly absent.

Bladder had been empty at 10 p. m. before death; now contains one-half pint urine, albuminous.

Diagnosis confirmed.

No. 11.

A. J.; black; aged 36 years. Died November 10, 8 a. m. Post-mortem examination at 3 p. m.

Reporter, H. Burford; operator, R. D. Murray. In presence of nearly whole force of attending physicians.

Reported as yellow fever November 3, and so treated. Fever continued high; bilious vomiting; delirium; no suppression.

External appearance: Large, muscular black man; not marked emaciation; *rigor mortis* marked. Eyes not more yellow than in health.

Abdomen incised; blood on knife; cavity contains fluid. Small intestines injected till anastomoses are complete.

Colon empty, filled with gas; strong fecal odor.

Stomach contains about 6 ounces of bile and mucus; no bloody flakes; ecchymotic spots about cardiac orifice and less along curvature to the smaller end; no general mottling of inner coats, mucous coat softened.

Duodenum contains bilious fluid, not black; the anastomoses not as complete as lower down.

Small intestines distended with gas and contain brownish paste.

Rectum full of brown feces.

Liver much enlarged; edges rounded and smooth; color reddish brown; fat globules on knife; tissue friable, bloody.

Gall bladder nearly full of black, iridescent, tarry fluid, which has stained adjacent tissues.

Pancreas not changed.

Spleen enlarged; color outside light; spleen blue; lower end adherent to abdominal wall; on section, light walnut color; pultaceous; breaks easily.

Kidneys: Both surrounded with thick layer of fat; capsules adherent. Both enlarged to about four-thirds normal size. Cortical substance pale yellowish; medullary portion dark color; dividing line broad; some fat in pelvis. Apparent fatty degeneration in both kidneys.

Bladder empty.

Diagnosis.—Malarial fever, and agreed to by all present.

No. 12.

B. B.; white; foreign; aged 46 years. Died November 5. Post-mortem examination twenty hours after. Reported as yellow fever November 1, and treated as such.

Reporter, C. Faget; operator, R. D. Murray. In presence of nearly whole corps.

Previous history.—No black vomiting, but much bilious vomiting; very high and continuous fever; no suppression; delirium.

External appearance: No emaciation; body warm; *rigor mortis* marked; one-half inch of fat under integument; white froth from nose and mouth; skin slightly yellowed as are sclerotics; some ecchymosis on face.

Section: Subcutaneous fat faintly yellow; blood on knife; intestines moist, slight amount of fluid around them.

Stomach contains small quantity of grayish, thick fluid; cardiac end congested, mottled, and spotted with red color and points; this fades toward large circumference and is entirely absent in small end. Fecal odor distressing.

Duodenum and small intestines contain greenish yellow paste; lower part of ileum empty.

Colon contains brownish yellow feces.

Intestines show dark color below, light above.

Liver much enlarged; edges round, dark-brown color; bloody on section; no yellow spots in substance; friable, almost pultaceous. Gall bladder nearly empty; contains some thick black fluid.

Spleen three or four times normal size; almost globular in shape; dark blue externally; nearly black on section; pultaceous.

Kidneys: Embedded in much fat; both enlarged; capsules easily detached;

medullary substance very dark brown, contrasting in relief with cortical, which is light yellow in color; fat globules exude from both portions when cut.

No blood in pelves.

Diagnosis.—Malarial fever; agreed to by all except attending physician.

No. 13.

C. R.; Norwegian; aged 28. Died November 13, 1894. Post-mortem examination eight hours after death.

Reporter, H. Burford; operator, R. D. Murray.

Reported as yellow fever November 4. During illness exhibited all symptoms, with black vomit and suppression of urine.

External appearance: Body deep shiny yellow with large purplish mottled spots, dark froth from nostrils and mouth.

Conjuntivæ deep yellow; pupils dilated.

On section no blood seen; intestines dry; no fluid in abdomen.

Stomach: Contains black vomit, which fills intestine for about 3 feet. Coat of stomach soft and easily rubbed off; generally mottled; uniformly dark brown under mucous membrane, increasing toward and to pylorus.

Duodenum full of black vomit, almost black in color; anastomoses of vessels on free edge shown plainly by the retained blood; mucous coat soft and easily detached.

Small intestine above near duodenum shows anastomoses, and dark externally; below more normal, till in ileum no bad sign is seen; upper part has black fluid, shade changes to brown and finally grayish, with mucus and gas; in several places marked contractions of the gut; large intestine moderately full of grayish matter and partly digested milk.

Liver not enlarged; edge sharply defined and serrated, as if contraction had gone on; boxwood outside and on section bloodless; vessels empty; no fat signs; no degenerative signs.

Gall bladder contained about one-half ounce of thin yellow fluid.

Pancreas not changed from normal.

Spleen normal or less in color, size, and shape; bloodless; fibrous; firm on section.

Kidneys: Right and left capsules slightly adherent, tissue pale, the two portions distinct; no hemorrhage into pelvis; no changes from normal observable.

Bladder full of urine.

Heart pale in color; contains black, thick, but not coagulated blood; tissue seems to be normal; no fatty degeneration.

Lungs normal, except hypostasis lower part of each.

Diagnosis confirmed.

No. 14.

L. D.; white; female; age 35. Died November 5, 8 a. m. Post-mortem examination three hours after death.

Reporter and operator, R. D. Murray. Reported as yellow fever November 2.

History.—Woman was much run down from long watching over her ill children. Got up morning of October 31, feeling badly. Thinks she had a chill on 30th. Seen November 1. Temperature 103° F.; pulse 104; tongue soft, flabby; no red edge; pain in sides, legs, right shoulder, and head; pupils large. Morning of November 2, had pulse of 96, same temperature; the fall in pulse prompted the physician to report the case to board of health as yellow fever, which action he hedged by a statement that he thought the case malarial. On next visit he regretted his report. The case progressed from bad to worse, the fever ranging from 102° F. to 105° F., attended with bilious vomiting, "a lump in the throat," and gradual loss of strength. Delirium set in twelve hours before death; no black vomiting, no suppression.

External appearance: No frothing at the mouth or nose; body not much emaciated, not yellow in color. Conjunctivæ slightly yellowed; pupils contracted; no *rigor mortis.*

Abdomen: Blood on knife; fat not yellow, normal color; one-half pint of pale fluid in abdomen.

Intestines bathed in serum; lower portions dark and mottled brownish. Stomach contracted; walls congested and thickened, contains small quantity greenish fluid and mucus; around cardiac orifice a circle of starlike infarctions, the spaces becoming greater farther from the orifice; a few of same points in greater curvature. Toward pylorus no sign of them or other submucous infiltration.

Duodenum pale; no anastomoses observable; contents greenish milky fluid; not distended. Small intestines gassy, and lower down congested with reticulations of vessels plain all around gut.

Colon full of gas and lined with brownish paste.

Liver much enlarged; bloody on section; light and dark walnut colors, mottled; anteriorly friable; posteriorly much softer and almost black in color.

Spleen enlarged; globular; soft as a flaxseed poultice; nearly black on section; tissue easily oozes out.

Kidney: Left congested; dark brown in color; capsule nonadherent; cortex paler, but other portion dark brown; no blood in pelves.

Bladder empty. Other organs not examined.

Diagnosis.—Malarial fever; subsequent inquiry showed that this person suffered with yellow fever the last half of September.

No. 15.

R. S.; white; Swiss; age 23. Died November 20. Post-mortem examination two hours after death.

Reporter and operator, R. D. Murray.

History.—Sickened night of November 14. Was given frequent doses of castor oil and C. C. pills, without result until 16th, when he was given a large dose of salts and an enema. Night of 17th a physician was called who found his temperature to be 105.5° F.; pulse, 84, on which I gave a fatal prognosis to stimulate best effort to save the boy. Hyperpurgation had had a bad effect, but the case progressed until November 19, when suppression and black vomiting began the closing scenes. During night of 19th he vomited profusely, in spite of efforts to control; passed no urine during last thirty hours. Suppression proven by use of catheter, efforts to have the exosmosed blood pass down, though efforts of enemas failed. Mental faculties clear to the last effort to vomit, when a gush of black vomit ended all, the fluid flowing over his cheeks, where, drying, it made a chance for an illustration for a book; not a common case, as usually nurses wipe off the faces.

External appearance: Body well nourished; not emaciated; color bright glistening yellow; some purplings on neck.

Abdomen: Incision bloodless, although death had occurred but two hours before; fat deep bright yellow; cavity contained no fluid. Omentum and intestines dry, but not sticky. No fecal odor. Odor not remarked, although there were eight physicians in the room.

Stomach: Walls thickened; pale outside; contains one-half pint black vomit. Ecchymotic infarctions from middle of stomach to pylorus, but no space of general blending together.

Duodenum: Distended with black vomit; outer surface pale and white; mesenteric anastomoses come to gut but do not run around it, leaving the gut clear, difficult to make out course of small vessels.

Small intestines: Upper half of jejunum, contents black vomit; lower half; grayish and light brown paste; ileum empty; has a number of contracted spaces from 1 inch to 3 inches in length through which a lead pencil only could pass.

Colon empty; contracted from cecum to sigmoid flexure until it looks like a string of master-root beads (worn in country to ward off disease), or a cane made of a shark's backbone, the beads or rings on one side being secured by a sunk-in ribbon, and the whole held fast to abdomen. This contraction of colon is evidently due to the hypercatharsis with which the lad was favored by his friends who knew there was no yellow fever in Brunswick, and it perhaps prevented the expected effects of clysters. If the vomit could have passed down instead of being thrown up there would have been no reason for the death.

Liver, bright boxwood, mottled in color, shrunken, edges sharp, bloodless, no sign of fat in tissue.

Gall bladder nearly empty; 2 drams brown bile in it.

Spleen normal in size, shape, color, and consistence.

Pancreas: No change noticeable.

Kidneys: Both enveloped in fat, both congested or moist with watery blood, dark in color. Cortex dark, medulla darker, the line distinct, no blood in the pelves.

Bladder contains half pint of urine (albuminous) and yet six hours before it was empty. Thus showing what for years I have insisted on; that there is invariably post-mortem escape of urine through the kidneys even when the suppression has been positively demonstrated.

Diagnosis confirmed.

JOHN WILLIAM BRANHAM.

The following announcement was sent to the officers of the Marine-Hospital Service:

TREASURY DEPARTMENT, U. S. MARINE-HOSPITAL SERVICE,
OFFICE OF THE SUPERVISING SURGEON-GENERAL,
August 23, 1893.

To the medical officers and acting assistant surgeons of the U. S. Marine Hospital Service:

It becomes my painful duty to announce the death from yellow fever of Assistant Surg. John W. Branham, at Brunswick, Ga. He was taken ill about August 10, while in the performance of quarantine duty at Brunswick, and died on the afternoon of the 20th.

Assistant Surg. Branham was born in Walker County, Ga., October 27, 1868, and his early education was derived from the schools of his native State. When he was 13 years of age he moved to Baltimore, Md., and received a general education at the Baltimore City College. He then studied medicine at the College of Physicians and Surgeons, Baltimore, and graduated at the head of his class from that institution March 13, 1889. During this time his elder brother, Dr. J. H. Branham, of Baltimore, was his preceptor. After graduation he first served as resident physician at the City Hospital in Baltimore during part of 1889 and 1890, and afterwards was assistant quarantine physician for the port of Baltimore from May until November, 1891. Leaving Baltimore he moved to Kempsville, Va., where he practiced medicine until entering the medical corps of the Marine-Hospital Service. At the examination of candidates held in Washington, D. C., in March, 1893, Dr. Branham passed first among twenty-two applicants, and was commissioned assistant surgeon April 19, 1893, and on April 21 was ordered to the Marine Hospital, Stapleton, Staten Island. On the 25th of July Assistant Surg. Branham was ordered to Brunswick, Ga., to take charge of the quarantine at that port, where he remained in the active discharge of that duty until he was stricken down with yellow fever.

As an officer Assistant Surg. Branham was held in high esteem both by those under whom he served and by the Department. His ability was fully recognized, and he was chosen for the important duty of reorganizing the quarantine of Brunswick and establishing it upon a firm sanitary basis, the local quarantine at that point having proved to be insufficient. Through his death the service has lost an able officer.

Personally Assistant Surg. Branham was a man whose general education and medical attainments won for him the highest respect, and his social relations with his brother officers and others were characterized by a manliness of deportment and gentlemanly bearing that won the affection of all.

I have extended to his family the sympathies of the corps.

WALTER WYMAN,
Supervising Surgeon-General Marine Hospital Service.

As showing the public sympathy aroused by the death of Dr. Branham the following editorial from the Savannah Press of August 19, 1893, is here reproduced:

Brave Branham.—He meets his death in responding to the plain call of duty. He dies in the service of his country just as much as the soldier who falls in battle. Ordered to a dangerous and exposed place in the time of extreme peril he hastened to his post with fever on him. In spite of wasted strength he entered upon the most exacting work. He is the first victim to the pestilence he sought to stay. No warrior ever made more gallant fight for life. His vitality, in the face of the fatal symptoms of yellow fever, was marvelous, and for several days inspired the hope that he would live. He meets a soldier's death and fills a niche of glory for his country. Men like Benner and Branham are made of good stuff and such examples are heroic. The courage which quietly meets and grapples with insidious pestilence is calmer, yet stronger, than the valor which storms the fortress and plants the flag upon the shattered ramparts. Brave Branham. He tossed upon an isolated cot and rests without the death salute or the bugle sound. But with all that he fills a hero's shroud, and, "After life's fitful fever, he sleeps well."

REPORTS OF MEDICAL OFFICERS OF THE MARINE-HOSPITAL SERVICE DETAILED BY THE PRESIDENT TO SERVE IN THE OFFICES OF THE UNITED STATES CONSULS AT FOREIGN PORTS AND OF OFFICERS DETAILED FOR OTHER SPECIAL DUTIES IN CONNECTION WITH THE MEASURES TO PREVENT THE INTRODUCTION OF CHOLERA IN 1893.

Report of Surgeon Fairfax Irwin, Detailed for Duty at Marseilles France.

To the Surgeon-General, U. S. Marine-Hospital Service, Washington, D. C.:

Sir: In compliance with your instructions contained in a circular letter dated July 6, 1893, I have the honor to submit the following report of transactions at Marseilles, France, relating to the efforts to prevent the introduction of epidemic disease, notably cholera, into the United States. I arrived at Marseilles and entered upon duty March 27, 1893, and found at once that as far as the observation of epidemic disease or the collection of statistics relating thereto was concerned I should have special difficulties to encounter, which I had not observed at any other continental city.

In company with the U. S. consul, Mr. Trail, I made the usual call on the *maire* of the city and informed him of my arrival, the object of my coming to Marseilles, and the desire of my Government to be kept informed as to the sanitary condition of the city. The *maire* courteously stated to me that he had no power to furnish information to foreign representatives, however well accredited, and referred me to the *préfet*, the representative of the national Government. The visit to the *préfet* was apparently more gratifying, as it promised great things for the future, destined, however, never to be realized.

Subsequently I informed the *préfet* that I would be quite unable to furnish bills of health to vessels going to the United States without a proper knowledge of the sanitary condition of the city, more especially as related to the number of cases and deaths of certain contagious diseases occurring from time to time. I also invited his attention to the fact that the sanitary returns which other cities furnished weekly were in Marseilles only to be had monthly, and asked to be allowed either to inspect the books daily or weekly or to attend the hospitals. Many promises were made, but none were ever kept.

By informing the steamship companies that unless I was furnished with the necessary information I would be compelled to withhold the bills of health, I succeeded in obtaining a weekly statement from the *préfet* to the effect that there was no epidemic disease present in the city.

There is no doubt that a systematic effort was made at Marseilles to conceal the presence of cholera, and although it did not appear until nearly two months after the official visits just described it was never acknowleged by the authorities so far as I am aware.

One of the reasons given for this reticence was that twice recently, viz, last February, and also the preceding October, slight epidemics of cholera had occurred; that the *préfet* had called together the representatives of foreign governments then in Marseilles and given them the information of the first cases. This action was followed by the usual prompt quarantine regulations issued by nearly all Mediterranean ports against Marseilles, to the great commercial injury of the city.

Certain it is that the outbreak of cholera this spring was most carefully concealed, and while even French newspapers contained every day dispatches giving very accurate information as to the spread of cholera at Alais, Cette, Montpellier, and, in fact, all the towns of the Midi, where it prevailed, not a word was to be found relating to Marseilles. The number of deaths are published daily in an obscure newspaper, giving age and address, but not the cause of disease. By watching this report some idea of the death rate could be had, the normal being placed at about 35 daily. I was satisfied later that this was somewhat misleading, as it is hardly probable that the deaths in hospitals were included in this report.

However, the number of deaths in certain sections could be observed. All deaths on vessels in harbor could be quietly investigated, and deaths in hospitals could be inquired into by making judicious acquaintances among the employés. Nothing was neglected, not even watching the roads to cemeteries, when it was found that no help was to be expected from the sanitary authorities. Bills of health stating the presence of cholera in Marseilles were issued to vessels by myself at least six weeks before the same facts were stated on the French patente de santé or the British bill of health.

The city government of Marseilles is in the hands of the socialists, and I received no courtesy or recognition from them unless the bare right to existence in their city could be so called, in strange contrast to the treatment my colleagues received in other countries. I made an arrangement by which I obtained information of the appearance of the first cases of cholera in Marseilles, and of which I notified you by cable.

On April 18, under your instructions, I proceeded to Naples for duty, where I remained about five weeks, returning to Marseilles May 20. The period mentioned as being passed at Naples will no doubt be fully covered by the report of Assistant Surgeon George B. Young, Marine-Hospital Service, the efficient officer in charge there.

This period at Marseilles was quite unimportant as far as details are concerned, and Passed Assistant Surgeon Carrington, whom I relieved on my return, had observed nothing unusual, although he informed me that there was a good deal of talk concerning cholera in neighboring towns. The first cases actually occurred a few days after my return, that is, during the week ended May 27, in the Asylum of St. Peter. From that time the disease followed the slow and erratic course which has been characteristic of the epidemic in southern France so far this year, seemingly affecting no particular locality and showing no tendency to spread, yet still retaining a hold on the community.

From June 12 to July 9 there were about 140 deaths, and at the latter date there were occurring perhaps six or seven cases daily. There are two factors which I believe have to do with the slow progress of cholera in Marseilles and vicinity this year; first, the unusually dry weather, and, second, the education of the people to take the proper precautions in the presence of danger.

Even after the few slight rains during my residence in Marseilles there was always an increase in the number of cases of cholera. Three small epidemics in the space of two years is likely to teach some of the rules of hygiene to a people, and certainly no one can accuse the Marseillaise of an undue fondness for their water.

The reputation of Marseilles as to its sanitary condition is probably the poorest in Europe, and has been so for many years, certainly ever since the great cholera epidemic of 1884.

It is pleasant to be able to state that the work of completely redraining the city is now going on and making substantial progress, and there is every prospect that when this great work is complete Marseilles will be as healthy as any other city of its size and situation.

At present the drainage is very bad, and the most frightful odors from the sewers salute the passer-by, even on the magnificent Cannebière and the lovely Prado, unless masked by the hardly less objectionable sulphur which is universally burned in the sewers. The city being on a plain facing the Mediterranean and surrounded by mountains, naturally has its drainage toward the sea, and this is the direction with a few unimportant exceptions. One of the streams of Marseilles, the Jarret, receives a number of sewers, and its waters are foul and stinking beyond belief. This stream falls into the Huveaune River, which itself assumes the appearance of a sewer and flows along the Prado, through the grounds of the Chateau Borelly, and empties into the sea near one of the large bathing establishments of the Corniche.

A large part of the most densely populated districts of the city drain into the old port, always crowded with sailing vessels of every description, and with a very large population living close around its polluted waters. The collecting sewers are the gutters, and these tumble their nauseous contents down the steep streets around the vieux port and into its stagnant waters, where not even a tide exists to prevent stagnation.

Not far from the old port, beyond the Chateau of Pharo, once used as a cholera hospital, is the Catalans bathing place, the most frequented of them all, and right here empties one of the largest sewers of the city. Owing to insufficient fall and want of flushing, the sewers emptying into the old port are often blocked and full to the level for hundreds of yards from their outlets, accounting for the terrible sewer odors for which Marseilles is famous.

There is no doubt that the water supply of Marseilles is adequate in quantity, but the quality, unfortunately, is very bad. There are some cisterns and these are frequently contaminated by the house drains, while the main supply itself is infected before reaching the city. The importance of this water supply to other countries than France can hardly be overestimated, inasmuch as ships of all nations call at this port and the greater part of them obtain their water supply here. There has been a city on the site of Marseilles for twenty-five hundred years, and the condition of the subsoil from contamination should be considered.

Formerly all the water supply was taken from the Jarret and Huveaune, streams already spoken of, and fortunately now used only to a limited extent. There is still a small amount of water taken from a spring called La Rose, but so small as not to be of much importance.

The main water supply of the city is from the river Durance, a mountain stream. The water is taken from this river and brought to Marseilles by means of a canal and aqueduct about 80 miles in length. Nine miles from the point where the water is taken it reaches the settling basin of St. Christophe, measuring 1,500,000 cubic meters. From this point the water flows on by the Roquefavour aqueduct to a second reservoir, known as the réaltort, having a capacity of 4,500,000 cubic meters; and besides these there are four other smaller settling basins. Nine miles beyond this, at Gavotte, the canal branches to supply the suburbs of St. Louis and St. Henri, the former furnishing this year some of the earliest cases of cholera.

Proceeding, the main water supply goes on to Marseilles, reaching the city at Longchamps, about its highest point. Here is the very handsome Chateau de Longchamps, with its museums, parks, and great cascade. The water, in amount supplied, is ample—about 700 liters per day for each inhabitant. The water of the Durance is very muddy, and contains many bacteria, especially the *bacterium coli commune.*

The principal place of contamination of this water supply is for about 4 miles between Merlon and Longchamps, where the uncovered canal passes through a very thick population, besides 20 flour mills and 2 oil mills. The water is not filtered at any point, and the mud and filth fill the settling basins. These basins are, in my opinion, worse than useless. The following analysis of the water was made by Dr. P. David (pharmacien-major de Tre classe au XV Corps d'armée):

	Grains per gallon.
Total solids	25.41
Chlorine	1.19
Nitrates	Trace.
Nitrites	Trace.
Free ammonia	0.0007
Albuminoid ammonia	0.0021

This is the water carried to the docks and supplied to the ships there. My first action when the presence of cholera was assured was to insist that the two passenger lines going to the United States should take the water to be used on the voyage at Naples. To sum up, the water used in Marseilles is principally from the Durance, but in addition there are also supplies from La Rose, the Grands Puits, and the Huveaune. The last is the most dangerous water in the city, and is consumed in the neighborhood of the old port. An analysis shows it to contain a much larger percentage of albuminoid ammonia than the waters of the Durance.

The precautions against the occurrence of an epidemic taken by the sanitary authorities are at present not very evident. Contemplated changes in the sewers and to prevent the contamination of the water supply can not be completed under six or seven years.

The streets are kept fairly clean, and superficially Marseilles in that respect is above the average of cities on the Continent. Sulphur is burned daily in the sewers to the great damage of neighboring paint and gilding, but in a measure masking the frightful odors that emanate from them. Beyond these I know of no precautions being taken; in fact, concealment of actual cases of cholera seems of more importance than prevention. About ten days before my departure from the city, and when concealment was no longer possible, at least to inhabitants, the authorities began a medical inspection of departing vessels, noting, too, for the first time the existence of suspicious diarrhea cases on the bill of health. This, however, did not prevent the departure of a good many vessels, notably English, with cholera on board.

I had occasion twice to arrive at Marseilles on a vessel coming from Naples and was surprised at the quarantine methods in vogue at the time. After arriving within the port, but before being allowed to dock, the captain went in his boat to report his arrival and the condition of the vessel. This report being favorable, she was then allowed to dock. Certain it is that on neither occasion was a medical inspection made, and it may be added that there is quite a large emigration from Naples to Marseilles.

The number of vessels sailing from Marseilles to the United States is fortunately very small, occasionally a sailing vessel, usually Italian. There are, however, two steamship lines engaged in the emigrant carrying trade, which depart from Marseilles, in the height of the season each about once in two weeks, proceeding via Naples, where the emigrants are embarked, to New York. These two lines are the Fabre steamship line and the Compagnie Nationale. Most of the vessels are old steamers fairly clean and well kept, having been used by the French Government for the transportation of troops.

With some changes in ventilation and running water introduced into the latrines, lavatories supplied, and with careful cleansing, they were made fairly comfortable, although I myself believe that under no circumstances should emigrants be carried between decks, as is now done. No matter what allowance for ventilation is made between decks, in bad weather it will always be found insufficient. Ports are closed, ventilators stuffed with pillows and bedding by the emigrants themselves, and under these circumstances, with seasickness added, the scene in this locality on an emigrant ship is something frightful. It ought not to be possible.

There was very little, if any, trouble at Marseilles in carrying out the regulations as applied to emigrant vessels; the agents and owners were anxious to comply with the law, and made all changes, sometimes at considerable expense, with alacrity. There was some objection at first to filling the water tanks at Naples, owing to the greater expense, but as Assistant Surgeon Young made the same demand there was nothing for them but to comply. I made two examinations of these steamers before each sailing, first after arrival and the clearing of the cargo from the hold; the vessel then usually went into dry dock and a very careful examination of the holds and timbers could be made. At this time I gave directions as to what changes I desired made, so as to give ample notice and to be able to verify them at the second examination. This final inspection was made six hours before the vessel sailed, and included everything relating to its sanitary condition. The crew were mustered, vaccinated when necessary, and the manifest carefully gone over. The ships of the Compagnie Nationale all carried an excellent steam disinfector on deck, which was extremely useful and convenient. These disinfectors are not very expensive and take up but little space. I think every vessel carrying emigrants should be compelled to provide one. On two occasions only, and it occurred once on each line, the crew were not all on board at the final inspection; the ship was in each case delayed twelve hours and it never happened again. With the power to refuse a bill of health, if necessary, no officer need anticipate any difficulty in enforcing the sanitary measures called for by the regulations.

The number of emigrants leaving Marseilles during my tour of duty there did not in all amount to more than fifty. Everything was done to discourage any such movement, and the companies were averse to it themselves. The French do not emigrate, and the few who desire to go from Marseilles are as a rule Italians, Greeks, and Algerians. Cholera having appeared, I declined to furnish emigrant-inspection tickets, except after five days' observation, and this terminated the little emigration that existed. A few emigrants go through the city, en route for Havre or Bordeaux. At the former place they were subject to the usual five days' detention, and I suppose the rule was the same at Bordeaux.

The principal difficulties met with at Marseilles refer almost entirely to merchandise and its disinfection. Rags are exported to the United States in considerable quantities, and before allowing any movement of this kind I required the exporters to establish disinfecting rooms answering to every requirement of the Department regulations.

Only one merchant arranged the required plant, but his establishment is now all that could be asked. The appearance of cholera in May put a stop to this trade entirely, for although the disinfection might be most complete, the opportunities for reinfection of the exterior or coverings of the bales are very great, rebaling, cartage, and handling being considered. The exportation of rags may be arrested under the provisions of Article VII, section 2, of the quarantine regulations, and I am decidedly of opinion that to this list should be added wool and hides.

A large quantity of the rags packed at Marseilles for shipment to the United States are gathered at or in the vicinity of Carcassonne, where cholera is now prevailing, and the disinfection of these articles can not be too carefully observed. Hides are exported in large numbers, and were disinfected with sulphur in the usual manner except where the certificates of origin demonstrated the fact that they were collected in noninfected localities until the appearance of cholera required the disinfection of all hides without reference to their origin. Rabbit skins were fumigated with the rest, but as these are soaked in a solution of arseniate of potash and packed in benzine before shipment it really does not appear to be necessary. No other article of merchandise has given so much trouble as to questions of origin and disinfection as wool. Most of the wool handled at Marseilles is brought from Turkey, Russia, and Persia for transhipment, much of it to the United States.

Shippers and brokers declare that the regulations regarding the disinfection of wool are prohibitive, first, because of the expense attending the process; and, second, because the methods required injure the wool. I superintended the disinfection of about a thousand bales of wool at Belle de Mai, one of the suburbs, by method No. 2 of section 5, Article VII, of the regulations. It was a very difficult and troublesome work, and the amount of space required is very large. I was given to understand that this procedure added about 1 franc a bale to the cost of handling. This material should, of course, have been properly disinfected at port of shipment, and, indeed, a large proportion of it coming from Batoum was provided with a consular certificate which was worse than none at all, as it distinctly stated that the wool had been disinfected in a room "by no means air-tight."

As these wools almost without exception come from infected or suspected localities the restrictions applied by the regulations are to be commended, for although individual loss may be occasioned it is not to be considered for a moment when regard is had to the health of the people of the United States.

In any case, even if provided with proper certificates, I required all merchandise usually subjected to fumigation to be again disinfected in bales as a protection, as far as might be, against reinfection from handling at the docks of Marseilles.

In the month of April 4 vessels bound for the United States, carrying a total of 128 crew and 7 passengers, were inspected. In May there were 8 vessels, with 278 crew and 43 passengers. In June 6 vessels, with 185 crew and only 1 passenger.

Of the number of vessels examined only five were sailing ships, and indeed the total will show that the direct trade between Marseilles and ports of the United States is very small.

The history of the epidemic of cholera so far in the south of France is most unusual. It has appeared in upward of thirty towns and has lingered for more than two months without becoming of alarming proportions, except, perhaps, at Cette and Alais. This, no doubt, is partly due to the very dry weather and to the small towns infected. To Marseilles the latter reason would not apply, but as a substitute it may be stated that the infected water supply is little used by the Marseillaise for drinking purposes.

Since January, 1893, the following, towns and villages have been reported as infected with cholera: Lorient, St. Athanase, Nanterre, Quimper, Erguéarmel, Vannes, Nantes, Riantec, Port Louis, Gavray, Poulinice, Plöermel, Pontivy, Guiberon, Auray, Belty, Sables d'Olonne, Cette, Mines, Marseilles, Toulouse, Hyères, Toulon, La Seyne, Montpellier, Lunel, Lésignan, Alais, Lyons, Carcassonne, Mâcon, Avignon, Gavres, Larcat, Luc sur Aude, Pamiers, Mirepoix, Limoges, Privas, Sorgues, Cuers, and Cadière. Of all these places Marseilles, perhaps, is the only one of any real importance as far as the United States is concerned.

The fact that there have been three epidemics of cholera in this city within the past two years—and it should be stated here that statistics show, from January 31, 1893, to February 16 there were 297 deaths from cholera—and that the authorities studiously conceal the existence of the disease, makes this city doubly dangerous as an infecting center.

The projected changes in water supply and sewerage can not be completed under six or seven years, and until then, or until some arrangement can be made for the acquisition of accurate information by the representatives of our Government, I believe this city should be considered and treated as an infected port.

It may not be out of place for me to add my opinion that the detail of medical officers for duty abroad should only be made in case of threatened or actual epidemics, as in fact the law directs, and that a permanent arrangement for inspectors at foreign ports is unnecessary. The mere medical inspection of emigrants can be made to good advantage at home, and is free from the objection of performing duties on foreign soil under surveillance and with the reluctant consent of the governments concerned. In face of threatened epidemic disease foreign inspection is a necessity; in any other case it is superfluous and therefore unnecessary. I wish to state, also, my view that the present arrangement is the best that could be made from a business point of view. It is essential that the consul and medical officer should work in harmony. All matters relating to medical and sanitary affairs should be under the exclusive control of the latter, and this being understood all transactions are more certainly and easily carried out at the consulate than elsewhere.

It appears to me that the inspection of all vessels bound for the United States without regard to the sanitary condition of the port of departure or the character of the ship is quite unnecessary. All passenger vessels should be inspected, and of course ships of all descriptions proceeding from an infected port, but exception could be made of freight vessels going from ports in good sanitary condition.

Respectfully, yours,

FAIRFAX IRWIN,
Surgeon Marine-Hospital Service.

LONDON, *August 14, 1893.*

REPORT OF SURG. W. A. WHEELER, DETAILED TO VISIT FOREIGN PORTS WITH A VIEW TO SECURING UNIFORMITY OF PROCEDURE ON THE PART OF MEDICAL OFFICERS.

ELLIS ISLAND, PORT OF NEW YORK, N. Y., *October 14, 1893.*

To the Surgeon-General, U. S. Marine-Hospital Service, Washington, D. C.:

SIR: I have the honor to submit the following as a report of my inspection of the work done by medical officers of the Marine-Hospital Service stationed at various foreign ports. This work was undertaken in accordance with the following instructions:

LETTER OF APRIL 17, 1893.

"As soon as practicable you are directed to proceed to the foreign ports at which United States medical officers have been stationed, for the purpose of carrying out the provisions of the recent quarantine act. Having been a member of the Board which formulated the foreign regulations, and on account of your familiarity with the immigration service at New York, it is believed that you will be able to properly inspect the work of the medical officers at the foreign consulates. You will remain long enough at each port to observe the method pursued by these officers, to explain any doubts they may have with regard to their duties, and give such instructions in accordance with the regulations as seem to be necessary. On completion of this duty you will return immediately to your station at Ellis Island.

"Very respectfully, yours,

"WALTER WYMAN,
"*Supervising Surgeon-General M. H. S.*

"To Surg. WM. A. WHEELER,
"*U. S. Marine-Hospital Service, Ellis Island, New York.*"

Havre.—I left New York April 29 by the French steamer *La Touraine*, reaching Havre May 7. There I remained but two days, being hurried away by a telegram from Hamburg urging my presence there at once.

While in Havre I learned that the General Transatlantic Company is the only line carrying passengers to America, with the exception of a fortnightly steamer of the Union line from Hamburg, which during the summer calls at Havre and carries a comparatively small number of steerage passengers. All emigrants from Havre come from northern Italy and Switzerland and Belgium—practically none from France. They are collected at Basle, on the Swiss frontier, and Modane, on the Italian frontier, and on Thursday of each week a special emigrant train brings them to Paris, whence they are brought in another special emigrant train to Havre on the day of sailing, which is Saturday.

They do not stop at all in Havre, but are placed at once on the steamer. No provision whatever is made for their stay here, and the special from Paris does not arrive until about the sailing time of the steamer. Only the better class of emigrants come via Havre, as the price of passage is higher than some other lines ($40) and the French steamers are very well prepared to care for emigrants. They are furnished new beds and pillows, clean blankets, and plenty of nourishing food, as I can testify from personal observation on the trip over, which food is served them on long tables in the steerage. Under the new immigration law it is probable that the French company will bring its steerage passengers to Havre the day previous to sailing, that the required manifest may be properly made out and authenticated, and that will allow of a more thorough and leisurely inspection by our medical officers than is possible at present.

There is at Havre a most excellent local health board, and our medical officer will have, I believe, no difficulty in obtaining all the information desired as to the sanitary condition of the city.

Hamburg and Bremen.—I left Havre on the night of the 8th and went direct to Hamburg, at which port I remained eight days. While at Hamburg I visited Bremen, only two hours distant, and inspected the arrangements made there for the care of steerage passengers by the North German Lloyd Steamship Company in conjunction with the U. S. consul.

The business of carrying emigrants to the United States via Bremen is done entirely by one company, the North German Lloyd, which dispatches in the busy season (viz, the spring of the year) three ships per week to New York, and occasionally, about once, sometimes twice, a month, a ship is sent to Baltimore. The emigrants are brought by rail from Germany and Austria-Hungary and some parts of Russia, and are housed in Bremen in some forty hotels, which are all owned by private parties, but are, to a certain extent, controlled by the steamship company. The municipality of Bremen does not take any cognizance of the emigrants, and they are handled entirely by the steamship company. All emigrants from Germany and northern Europe, excepting Russia, are allowed to take the steamer next sailing after their arrival in Bremen, while those coming from Austria-Hungary and Russia are at the present time obliged to remain in Bremen in certain houses, which are designated by the steamship company, for a period of five days after arrival, but during those five days they are allowed to roam freely about the city and mingle with the citizens and other emigrants. The vessels of the steamship company do not come up to Bremen, but discharge and take on all their passengers at Bremerhaven or Nordenhamm, directly opposite, on the Weser, about 50 miles below the city of Bremen.

The sailing hours are Tuesdays, Thursdays, and Saturdays, in the forenoon. On Monday, Wednesday, and Friday afternoons, at 1 o'clock, in a large building near the union station in Bremen, built by the steamship company as a baggage room and inspection depot, the emigrants are inspected and vaccinated by two physicians of the city of Bremen, named Dr. Von Pelzer and Dr. Hahn, employed and paid by the steamship company and placed under the orders of our consul, Dr. Hugo M. Starkloff. These physicians are assisted in their work by one or more of the company's ship surgeons who may happen to be in port. The vaccination is made hurriedly, and the emigrants are then, while their upper clothing is removed, inspected and passed on to a waiting room, where they arrange their clothing, often while so doing wiping off the virus with which they have been vaccinated. They are then given an inspection card and dismissed to their hotels. Next morning early, usually about 6 a. m., they reassemble at the railway station, and those having cards of inspection are taken by train to steamship at Bremerhaven. They are there again inspected, this time by the consul, who goes with them for the purpose of issuing the bill of health and the manifest, as required by the new immigration law. The baggage of emigrants is placed in the baggage room, referred to previously, in Bremen. I was told that the baggage of all those coming now from southern Europe and Russia was disinfected, and I visited a shed on the company's grounds, near the baggage room, which was used as a sulphur fumigating chamber. I entered this chamber, and the outside of a lot of baggage was being fumigated in an atmosphere which contained some fumes of sulphur. Adjoining this shed were the foundations of a building which will contain three steam disinfecting chambers, oval in shape, 6 by 8 feet. (I saw the chambers on the ground), provided with racks, a front and back door, and rails on which to run the car, and arranged for both steam and hot air. These chambers are being built by the steamship company and could be completed and in running order in twenty days.

I visited the only other steam chamber in the city, that at the poorhouse, which consists of a single chamber about the size of those previously described, and I was told that it was used by the steamship company whenever it was desired to steam any baggage of their passengers. It was not in use upon the day of my visit. The immigrants who come to the United States via Bremen are, as a rule, clean, healthy people, because they come largely from Germany, and it is not as favorite a port of departure for the Russians, Bohemians, and Poles as Hamburg is. Moreover, the rates of steerage passage to America are higher by the North German Lloyd Company than by one of the Hamburg lines, the Union. I must say the work of inspection of immigrants as carried on by the physicians under our consul is fairly well done, but I take exception to their methods of vaccination, which, as you are aware, is not generally done before the departure of the ship, but by the ship's surgeon the first day out of port. With regard to the baggage, very little of it at present, in my opinion, needs disinfection, but if it did need steam disinfection, at present it could not be done, at least on any large scale. Consul Starkloff informed me that the houses from which the people who had smallpox on the steamers *Lahn* and *Gera* came had been ordered closed and fumigated. I remarked that as each and every emigrant had been vaccinated in Bremen before his departure, I was forced to the conclusion that either vaccination did not protect, or the work had not been properly done. Since my visit to Bremen one of our medical officers has been sent to Bremen to relieve the consul of this sanitary work, and the necessity for the employment of physicians under the authority of the consul no longer exists. From Bremen I returned to Hamburg and remained a week, during which time I had abundant opportunity for observation.

The bulk of the commerce between Hamburg and the United States is in the hands of the Hamburg-American Packet Company and the Union Line, as it is called, which is owned and controlled by the owners of the Hamburg-American Packet Company. All emigrants, whether going via the Hamburg Packet Company or via the Union Line, are furnished and cared for by the Hamburg-American

Packet Company. During the cholera scare of last year the packet company constructed at its own expense a building near their warehouse on the other side of the Elbe, which is called the barracks, capable of accommodating 800 persons. These barracks are fairly well ventilated and provided with bath rooms (four tubs in each room), a small (8 by 10 feet) steam disinfecting chamber, fairly good water-closets, kitchen, and dining room.

Upon the completion of this building the city of Hamburg took possession of it, placing it under the charge of the police department, and the city itself undertook the work of detaining all persons coming from Russia, Hungary, Galicia, and Poland, and keeping them at the barracks and steaming their baggage. It was claimed that all the people were given a bath at once, and while bathing, their clothing was steamed, and afterwards their baggage. In company with Dr. White I visited the barracks on my second day there, and I noticed that many people (there were then some 700 detained) had not been bathed and that no baggage just then was being steamed. The women and children were lying on their beds or crowded in their dormitories, and all were mingling freely together, those who arrived that day with those who had been there five days. I then visited the steam disinfecting lighter, which the packet company has furnished Dr. Nash at Dr. White's suggestion, for the steaming of such baggage as he (Dr. White) requires done. It is an iron boat divided into two compartments, not lined, and the steam is introduced from a boiler on a tug alongside. The chambers not being lined, it was not possible the day I visited it to raise the temperature of the chamber over 150° F. It appears that the city of Hamburg causes all Russians, Austrians, Poles, and Hungarians at present to be switched off just out of the city limits and carried to the barracks, where they are detained in the manner I have described for five days, and then allowed to go aboard the steamers for the United States. In an interview with the chief director of the packet company it was agreed that, if the city was willing, all Austrians, Hungarians, and Galicians should come into the city and be kept in a large hotel which Dr. White and I visited, there to be under the care of Dr. White until he should consider them safe to go aboard ship. This house will accomodate some 400 people, and the company has promised to provide six bath tubs and make other slight changes and place the house under charge of Dr. White, who can make a daily inspection of the place and see that his requirements are carried out. That will materially reduce the number of people at the barracks and enable those kept there to receive more attention. I again visited the barracks a few days later and found a great change. The steam plant was in full blast and a lot of clothing was being subjected to a temperature of 225° F. The bathrooms were in use. One of the dormitories was being cleaned and many of the people were washing their clothes on benches in the yard. I was asked to make suggestions, and that convinced me that the packet company had more to do with the management of the barracks than they had at first been willing to admit.

I suggested that Dr. White be allowed to make a daily visit to the barracks, and that his suggestions be carried out as far as possible; further, that a washhouse be built to encourage the women to wash all their clothing as soon as it had been steamed, and that a pavilion be built to allow the people to get out of their dormitories during the whole day, so they might be thoroughly cleaned and aired for the night. About 550 people were there on the day of my visit, of whom 150 belong to the classes which will be hereafter cared for in the hotel in Hamburg, under Dr. White's direct supervision. The inspection of emigrants just previous to sailing is made in the waiting room of the packet company at the landing, and at present is conducted by four physicians: Dr. Nash, who is employed by the packet company as agent of Dr. Jenkins, of New York; Dr. Muller, a Hamburg physician, employed by the packet company to assist Dr. Nash; Dr. Homann, who is employed by the city of Hamburg as police surgeon to protect the people of Hamburg; and lastly, by Dr. White, who, after inspection, issues them an individual card.

The ventilation of many of the old ships of the Hamburg-American and the Union Line was found insufficient. Improvement is being made in this respect gradually.

Genoa.—On leaving Hamburg I went direct to Genoa, where I spent three days, during which time I made an inspection of the steamship *Fulda.* I learned that the North-German Lloyd Company of Bremen is the only line carrying steerage passengers to the United States from Genoa. They have three ships employed in this trade during the winter, and but two during the summer. A round trip consumes five weeks, so that during the winter three ships leave Genoa for New York every five weeks. It is thus the duty of an inspector to look after but two passenger ships a month at Genoa, carrying last year to the United States some 7,000 steerage passengers. In addition to this there are some merchant vessels, mostly French and English, carrying marble and cotton waste to the United States. The emigrants from Genoa are almost all from the northern portions of Italy, with a few from Switzerland and Austria. They are a clean, intelligent people generally, and the ships which bring them are well arranged and ventilated, and usually are not crowded. At the present time all emigrants are inspected on shore before being placed on shipboard, and as there have been a number of cases of measles and scarlet fever in Genoa, and the emigrants arrive in Genoa often some days before the sailing of their ship, all their baggage is now placed in an air-tight compartment on a wooden lighter and subjected to sulphur fumes for twelve hours. There is no provision for the steaming of any baggage in Genoa, and from a conference with the agent of the steamship line I learned that if the steaming of the baggage should at any time be insisted upon by the inspector they would prefer to give up the emigrant business, especially so as already the season is nearly over with them. I consider the work of inspection at Genoa well done.

Naples.—Naples was the next port visited and eight days were spent there. It is the most important seaport of Italy and its trade with other Mediterranean ports very great, besides which it is the great depot for emigrants bound to the United States and South America. There are five lines at present engaged in the passenger traffic to the United States, and they employ about twenty-four ships. These lines are the Anchor Line, of Glasgow; the North German Lloyd Line, of Bremen; the Fabre Line, of Marseilles; the Florio Rubatino Line of Genoa, and the French National Line, of Marseilles. In the year 1892 these five lines carried some 38,000 emigrants to New York, the majority of them during the months of March, April, and May. These emigrants are of the peasant class and from the interior portions of southern Italy and Sicily, almost without exception. They do not engage passage from the steamship agents, but from emigrant brokers, as they might be called, who engage with the steamship company to furnish them so many head of steerage passengers, for which the steamship companies pay them a commission.

These brokers bring their people to Naples and keep them at different boarding houses till the day before sailing, when they send them on board the ships in small boats with their baggage. This embarking of emigrants is a slow process, as you can understand, and is accompanied with much inconvenience, especially if it be raining. After all the emigrants are on the vessel she is visited by the Italian commission, three officials of the Italian Government, whose duty it is to prevent criminals from escaping punishment, husbands and fathers from deserting their families, and young men from evading army service. This commission examines the passport of every passenger, and after its work is done the vessel may sail.

You will thus see that the work of inspecting vessel and passengers by the United States inspectors at this port is seriously complicated by these two facts, the taking off of the passengers in small boats, and the examination on board of all passengers by the Italian commission. The first makes it necessary, if the passengers are to be inspected on shore, that it be done many hours before the ship sails, and the second makes it obligatory to inspect the crew while the passengers are aboard.

At present the steerage passengers are inspected by the United States inspector on the day preceding the sailing of the ship, which sailing is usually at 6 or 7 p. m. They are collected outside of a small building on the water front, admitted to the building a few at a time, inspected by the medical officer, their passports and inspection cards stamped, and then passed to another room where they are vaccinated by an assistant and their inspection cards again stamped. They then go for their baggage and with it are carried in the small boats to the vessel. As they board the ship their baggage is opened and examined, and if passed, a proper tag affixed by assistants of the United States inspector. The next day the crew of the vessel is mustered and inspected and the ship examined when, if found clean, a bill of health is given her.

There are no facilities in Naples for the fumigating or the steaming of baggage, and, should it be required at any time by the inspector, I believe the steamship companies would give up steerage passenger traffic rather than provide such facilities. As the spring emigration is now about over the existing arrangements can not probably be improved upon except, perhaps, to provide a shelter for the emigrant while he is awaiting his turn to be inspected. This, in a slight degree, the steamship companies propose to do. I may add that the Italian Government is erecting a shed on the water front, which will be used, when completed, by the Italian commission for their examination of emigrants, and it may be that the United States inspector can make some use of the building for his purpose.

In the fall of the year there is usually some migration from Sicily to the United States via Palermo; at present there are no passenger ships running there. It would be a comparatively easy matter for the inspector at Naples to visit Palermo on the ship's sailing day and inspect the passengers.

Marseilles.—From Naples I journeyed to Marseilles, the largest seaport of France. An extensive trade is here carried on with countries bordering on the Mediterranean Sea and with the East Indies and China, but no passenger traffic is carried on with the United States. The Fabre line of steamers and the French National Line are owned in Marseilles, but they carry all their passengers from Naples. Their first port of departure is often Marseilles, and, as the ship hails from that port, it is assumed that her passengers embark there, but this is not the case. Immigrants reaching Marseilles from other Mediterranean ports are forwarded by rail to Antwerp or Havre, and thence embark for the United States.

The work done at Marseilles consists principally of the fumigation of rags which are destined to United States ports, and these shipments are neither frequent nor very considerable in amount. The fumigation of these rags is, I believe, very complete, all being loosely spread upon racks and exposed for twelve hours. There is absolutely no passenger traffic between Marseilles and United States ports, and very little freight traffic.

With regard to the health of Marseilles it would appear from a study of the reports issued monthly by the health board that there were fewer deaths from all causes during the last three months than for the corresponding period of 1891 and 1892, and the death rate of the city is not large. Many intestinal diseases naturally prevail during the summer months, and it is doubtless true that cases of cholera occur.

Probably there are some cases every year, and probably some at the present time, but I am satisfied that it does not prevail in an epidemic form, and I am further satisfied that as no immigrants or personal baggage are carried from here to the United States very little danger at the present time is to be feared from this quarter. It is true that a positive diagnosis is not made of many intestinal disorders which occur here during all seasons of the year, and it is also true that accurate and positive information with regard to all such diseases is not within the reach of the United States inspector, but I am not inclined for that reason to assume that doubtful cases are all cases of true cholera. It is much to be regretted that the authorities do not appreciate the importance of careful diagnosis in these cases, and appear to be unwilling to afford our inspector any facilities for obtaining prompt and accurate information.

Antwerp.—From Marseilles my journey was continued north across France to Antwerp, the chief port of Belgium. A stay of five days was made here and the result of my observations is as follows:

The passenger business between Antwerp and the United States is entirely in the hands of one company, the Red Star Line, which sends during the summer season two ships per week to the United States. The Saturday ship for New York and the Wednesday ship for Philadelphia.

The Hansa Line, owned by the Hamburg-American Packet Company, of Hamburg, stops at Antwerp usually on Tuesdays of every week during the emigration season, and takes passengers to Quebec. The Red Star Line, through its agent, handles the passengers of the Hansa Line, and it is a member of the steamship pool, which embraces, besides, the lines carrying passengers from Hamburg, Bremen, Amsterdam, and Rotterdam. The Red Star Line does not provide any hotels in Antwerp for the accommodation of its steerage passengers, but it controls at the present time two out of a total of some thirteen which are used in the city as emigrant lodging houses. It has also secured for the summer season the use of a city bath house, in which there exist facilities for bathing sixteen persons at a time, and which is provided with a steam chamber for the steaming of wearing apparel. The steamship company secures business through its own agents and their subagents scattered throughout Europe, and instructs its steerage passengers to present themselves in Antwerp two days before the sailing of the ship. On arrival at Antwerp they are met at the stations by the company's men, who, at the present time, conduct those coming from Russia and those coming from Hungary to these two hotels which they control. All others are allowed to go where they please.

The Russians are held at Antwerp for five days at their own expense, during which time they are given a bath at the city bath house (and their wearing apparel steamed while they are in the bath), and their baggage is taken to one of the company's wharves, and there unpacked and hung upon lines stretched across a ship's compartment, when it is steamed for an hour at a temperature of 188° F., the highest point they have as yet reached. At the time of my visit to Antwerp, people coming from Hungary were looked upon with suspicion, and detained and treated in the same manner as were the Russians. It has been the habit to inspect the steerage passengers upon the dock a couple of hours previous to sailing, and as this is most unsatisfactory, both because the time is far too short and because the facilities are in nowise adequate, a very urgent appeal was made to the company, and it was promised that in the future the passengers should present themselves for examination on the day previous to the ship's sailing, when the hour for leaving was in the forenoon, and a suitable building is to be provided in which the examination of both passengers and baggage can be conducted in a careful and thorough manner. The steamship company shows a disposition to furnish any reasonable aid to our inspector in carrying out his instructions, and to that end has prepared plans for a steaming plant with which to disinfect baggage such as the inspector may designate, which plant, when completed, will be all sufficient to do the work required, and superior to anything of the kind that I have seen at any European port. I assisted at the examination of the steerage passengers of the *Friesland*, leaving June 10, and among them were many Greeks, Poles, Hungarians, Russians, and Syrians, whose personal appearance, at least, could hardly be called prepossessing. The inspection work at Antwerp, I believe, will soon, with the cooperation of the steamship company, be all that can be desired. I was rather surprised to learn that the people of Antwerp do not regard smallpox as a disease particularly to be dreaded. It is treated in the city hospitals as other milder diseases, and at the date of my visit there I saw some sixty-odd cases. It is, however, diminishing since the advent of warm spring weather, which is natural. Vaccination is not compulsory, nor, in fact, very popular, most people having no fear of the disease.

Rotterdam.—Rotterdam was the next point visited, being but two hours distant from Antwerp, situated on the Maas, one of the mouths of the Rhine, not many miles from the sea. This is the chief port of the Netherlands, and it enjoys an extensive trade with all parts of the world. One line of steamers carries passengers between Holland and the United States, and this line sails chiefly from Rotterdam, sending two ships per week from that port, and two smaller vessels per month from Amsterdam. This line, the Netherland-American Steamship Company, has been long established, and is in possession of very extensive wharf property at Rotterdam, on which they have erected large buildings for their freight and passenger business. This property is across the river from Rotterdam proper, and is far removed from the residence part of the city, and quite isolated. Seeing its many advantages to them, the company last year built almost upon its wharves a large hotel in which to properly care for all its steerage passengers until the sailing days, Wednesday and Saturday. This hotel is of brick, well built, and four stories in height, lighted and ventilated in the most approved manner, and with excellent plumbing. The three upper floors are used as dormitories, and each floor has accommodations for 300 people. The first floor is taken up with offices (passengers there obtain their steamer tickets), and the dining room. Excellent wash rooms are found upon each floor, and a bath house has been provided across the street, in which are twelve or fourteen shower baths. The food furnished at this hotel seemed to be of good quality and abundant in quantity, and the price for board and lodging is 48 cents per day. By a rule of the company all steerage passengers must come to this hotel at least thirty-six hours before sailing time, to be properly inspected, ticketed, and listed on the manifest. As the hour for sailing varies according to the tide, and often occurs in the early morning, it has been thought best to have the final inspection of the emigrants on Tuesdays and Fridays, and it has been arranged that our inspector shall have sanitary control of the hotel, and make a daily visit there to examine all those arrived the day before, and to make such disposition of their baggage as he deems necessary.

At the present time all people coming from Russia are detained at the hotel five days, and in the meantime their baggage is steamed in a chamber constructed for that purpose in a building adjoining the hotel. I am convinced that this is thoroughly done, having witnessed the process several times. In view of the fact that at present the passengers from Russia and the Orient are looked upon with suspicion, the steamship company, during my stay in Rotterdam, voluntarily withdrew the sale of tickets to those people and telegraphed such instructions to their agents in Russia and the East. As a result of this hereafter all Russians who come to Rotterdam will be obliged to cross England to reach America. The arrangements for the care and the careful examination of emigrants at Rotterdam are far better than I have yet seen at any other port, and practically the same methods will be adopted as are now in use at the other continental ports where our inspectors are stationed. While at Rotterdam I learned that large numbers of Russians were passing through on their way to Liverpool, there taking steamer for New York or

Quebec. This movement dates practically from the beginning of this year, and, from figures which I obtained from the Holland emigration commissioners, has increased from 165, as the number in January, to 1,766, as the figures for May. In short, some 5,000 Russians thus far this year have passed through Rotterdam for America via England, a movement practically unknown till the present season. The explanation is this: For many years Hamburg has been the port of departure for all Russians, and the forwarding agents for this business all had their headquarters at Hamburg. Many of these agents are Russians, and the city of Hamburg has virtually prohibited foreign steamship agents, or rather forwarding agents, from doing business in Hamburg; so that these same people who formerly did business in Hamburg have now moved to Rotterdam and are forwarding their emigrants via England, as the Rotterdam line has been unwilling to take them at the same rates as some of the English lines. I make this explanation in justice to the Rotterdam steamship people, who are not alone responsible for the increased migration of Russians through Rotterdam. The health of the city of Rotterdam is excellent, and, as I said before, the conditions governing the inspection work there most excellent.

Southampton.—The next port visited was Southampton, England, a port of call for the German lines and the regular sailing port of the new American Line.

There are at present but four ships plying regularly between this port and the United States which carry freight and steerage passengers, and these comprise the American Line. This was formerly the Inman Line, owned by the International Navigation Company, which company also owns the Red Star Line, running between New York and Philadelphia and Antwerp. The North German Lloyd and the Hamburg-American ships, some of them, take on and disembark cabin passengers by means of a tender some miles below the city, but they do not handle immigrants or freight. One ship a week is dispatched by the American Line, sailing every Saturday at noon, and on the morning of that day practically all of their passengers, cabin and steerage, are brought down from London, distant 78 miles, by special trains. The steerage passengers arrive at 9:40 a. m. and the cabin passengers at 11:30 a. m. In the steerage are found many from the British Isles and at present many from the Continent, including Germans, Hungarians, and Russians.

The steamship company, instead of providing accommodation for the temporary care of its steerage passengers at Southampton, which is the port of departure, prefers to have them kept at a hotel, known as the "Emigrant's Home," at Blackwall, near London, and to furnish them with a special train to bring them to the ship on the sailing day. This applies to all steerage passengers from the Continent, those from the British Isles coming direct to Southampton from their homes. This arrangement of the steamship company makes it necessary, if the immigrant and his baggage are to be examined properly, that there should be two inspectors, one for emigrants from the Continent who are housed in London, and the other for those who come direct to Southampton.

Since the number of steerage passengers per week is now less than 300, and that number is not likely to be increased before another season, it would appear to me to be most desirable, as far as the work of inspection goes, to have the examinations all made at Southampton, and the detention, if necessarry, and steaming of baggage should be directly under the supervision of the United States inspector. That would mean that steerage passengers must come to Southampton at least twenty-four hours before the ship sails, as is the case with practically all the other ports. The steamship company, I am told, intends building a hotel for the coming season which will accommodate their steerage people, but for the present it would appear that existing arrangements must suffice. All steerage passengers are grouped in one of the sheds on the quay soon after the arrival of the train from

London, and as they pass up the gang plank out in the open air they are inspected by the board of trade surgeon and our inspector, who after passing them furnishes them with an inspection card stamped, the name to be filled in by the ship's surgeon on the voyage. Those emigrants who arrive by train from London have been under the observation, for a longer or shorter period, of the inspector there, who under the direction of Dr. Pettus has detained those considered suspicious and boiled their clothing, no means for steaming being at hand. One inspector can not look after people in London and Southampton on the same day, nor can he inspect steerage passengers in London on Fridays, as he must be in readiness all of that day to visit the Hamburg-American ship for the purpose of issuing the supplemental health bill. The character of the emigration through Southampton is generally good, but it would appear that certain classes from the Continent who formerly went to the United States via Hamburg are now going to Southampton in small numbers to take passage on the American Line.

From Southampton my trip was continued to Liverpool, where a stop of several days was necessary.

The emigrant intending to go to the United States from Liverpool has the choice of eight lines of steamers—three to Quebec, one to Boston, three to New York, and one to Philadelphia. The lines to Quebec are the Allan, Dominion, and Beaver, and for the present season the baggage of all their steerage passengers is, under requirement of the Dominion Government, disinfected at Quebec or Point Levis, no matter whether the passenger be from the British Isles or from the Continent. The lines carrying passengers to the United States direct are the Cunard, one ship per week to Boston and one to New York; the White Star, one ship per week to New York; the Guion, one ship every fortnight to New York, and the American Line, one ship per week to Philadelphia. These lines carried last year over 50,000 steerage passengers, but as they all call at Queenstown a considerable percentage of this number embarked there. As a rule these ships carry people from the British Isles and Norway and Sweden, but through an agreement with the Continental steamship lines they also carry many emigrants from the Continent.

These latter reach Liverpool via Rotterdam and Hull or Grimsby, as a rule, though there are many other routes. The various boarding houses in the city harbor all emigrants until sailing day, when they are obliged to present themselves for examination at one of the companies' sheds some hours before the sailing of the ship. Their baggage is brought with them, and they have previously been furnished with a card by the steamship company giving their name and last residence. In these sheds the people and their baggage are inspected, and as fast as passed by the inspector their cards and their baggage labels are stamped. The steamship's people are warned by the inspector of those districts upon the Continent from which emigrants will not be received except after detention and disinfection of their effects, and they are trusted to notify the inspector when they have people from such districts. This seems at present to be the only feasible plan for obtaining this information, though it must be confessed it is open to objections. It is simply impossible to see many of these people or to learn anything about them before they present themselves for examination except through the steamship agents themselves. There are so many companies competing for the business, and there are so many lodging houses, and they are so scattered in various parts of the city, that no concentration of the people is practicable. For the limited amount of baggage at present requiring disinfection, facilities are furnished by two small steam chambers connected with the City Hospital. The steamship people have provided nothing, and the requirement by our inspector of any great amount of work of that kind would lead to a suspension of steerage business at this point. The Canadian lines, I am told, are carrying more than their ordinary number, perhaps because the impression has prevailed that immigrants via Quebec were not detained at the United States border by immigration officials, as is the case at New York. The vessels engaged in the passenger traffic between Liverpool and the United States are of the best in all their appointments, with most excellent steerage accommodations.

Glasgow.—Glasgow, Scotland, was next visited in accordance with cable instructions and these facts ascertained:

Two steamship lines compete for the emigrant-passenger business between Glasgow and the United States, and their American ports are Quebec, Boston, and New York. These lines are the Anchor, which has a weekly ship to New York, and the Allan State Line, which also has a weekly sailing to New York and a fortnightly ship to Boston and a fortnightly (sometimes weekly) ship to Quebec. When business will warrant it the Boston service is weekly also. These vessels, all of them, touch at Londonderry, in Ireland, and take on any passengers offering there, furnishing the most convenient route for emigrants from the northern half of Ireland, as does Queenstown for those from the southern half. The Glasgow lines carry many people from the British Isles, and also large numbers from the Continent, booking them to Glasgow via Hull and Leith. The inspection of these emigrants is made by a local physician in the employ of the U. S. consul at this port, and as there is work enough to demand the undivided attention of one man, I strongly urge that a regular medical officer be detailed for this inspection work. No facilities at present exist for the steaming of emigrants' baggage at Glasgow, but I believe, if it were necessary, suitable arrangements could be made, as both steamship companies have very extensive properties along the river front on which chambers for steaming baggage could be readily placed. The emigrant hotels are widely scattered, but under the control of the companies.

Hull.—From Glasgow I journeyed to Hull. Large numbers of continental emigrants are received at this port and forwarded by rail to Liverpool and Glasgow, but none sail direct to the United States. The Wilson line sends a ship once a week to New York, but carries no steerage passengers.

For the purpose of inspecting these vessels of the Wilson line it would be a comparatively easy matter for the medical officer at Liverpool to go to Hull once a week, the journey occupying about four or five hours, or a competent physician could be employed by the U. S. consul. Steerage passengers arriving in Hull from Rotterdam, Antwerp, or other continental ports do not remain at all, but proceed by rail directly across England to the ports on the west coast.

Queenstown.—Queenstown, in the south of Ireland, is the departing point for many emigrants since all the Liverpool lines touch there. They are from the country districts of Ireland and assemble at Queenstown on the day of sailing. The consul employs a local physician, who inspects all the people in the consul's office some hours previous to their sailing, issuing to them inspection cards. I am satisfied from personal observation that the work is carefully done, and I do not believe a more satisfactory method could be adopted. I took passage from Queenstown on the *Britannic* and reached New York July 21.

Very respectfully,

W. A. WHEELER,
Surgeon Marine-Hospital Service.

REPORT OF PASSED ASSISTANT SURG. C. E. BANKS, DETAILED BY INVITATION OF THE CANADIAN GOVERNMENT FOR DUTY AT THE CANADIAN QUARANTINE FOR INSPECTION, ETC., OF IMMIGRANTS DESTINED FOR THE UNITED STATES.

QUEBEC, CANADA, *August 12, 1893.*

To the Surgeon-General U. S. Marine-Hospital Service, Washington, D. C.:

SIR: I have the honor to submit the following report of the work done by myself and assistants at the St. Lawrence quarantines for the season of 1893:

While on special duty at Halifax during the month of April, I received the following telegram:

"WASHINGTON, D. C., *April 21, 1893.*

"PASSED ASSISTANT SURG. BANKS,
U. S. Consulate, Halifax, N. S.:

"Canadian Government has invited me to place an officer at Grosse Isle for the purpose of certifying to disinfecting of baggage for United States. Proceed immediately to Grosse Isle quarantine as representative of this Service. Be prepared to label baggage. Authorized to incur necessary expenditures. If needed, additional officer will be sent. Wire acknowledgment.

"WYMAN,
"*Surgeon-General.*"

I left at once for Quebec, via Portland, Me., where it was necessary for me to make some official and personal preparations for my duties at the St. Lawrence quarantines.

I reached here on the morning of April 27, almost simultaneously with the arrival of the first immigrant steamer. Your directions to "proceed to Grosse Isle" were not complied with because it appeared upon arrival here that the actual work of the season would be done at Quebec and Levis, on opposite sides of the St. Lawrence, and I have made my headquarters at this port accordingly.

The Dominion Government had designated these two places as substations of the official quarantine at Grosse Isle, as will be described below. In consequence of this arrangement the work of disinfection would be progressing in two distinct points simultaneously, and I found it necessary to have an assistant. With some slight intervals I have had medical assistants since May 2, and, in addition to them, two persons to aid in the labeling and tagging of baggage.

SANITARY CONDITION OF PORT—QUARANTINE REGULATIONS IN FORCE.

The sanitary condition of Quebec has been excellent during the whole quarantine season to date.

The quarantine regulations in force at this port have been as follows: By an order in council dated April 18, all vessels bringing immigrants to Canada were directed to land the steerage passengers at Quebec (for the Canadian Pacific Railway) or opposite, at Levis (for the Grand Trunk Railway), at which two points, under the directions of Dr. Montizambert, the disinfection of luggage has been done. The following is a copy of the order:

1. During the coming season of St. Lawrence navigation, as a precautionary measure for the protection of Canada from contagious disease, the luggage of every immigrant entering Canada, except that of first-class passengers, by way of the St. Lawrence in vessels not detained at Grosse Isle for the reason of having no sickness on board, shall be disinfected at the point or points hereinafter named.

2. Such disinfection shall be made by the steam process, by the fumes of sulphur, or by the bichloride drench, to the satisfaction of the medical superintendent of the Grosse Isle quarantine station.

3. The certificate given by the quarantine officer at Grosse Isle to vessels inspected at that station shall not be valid until such disinfection shall have been certified to be effective.

4. Such disinfection shall take place at—

a. The Louise Embankment, or

b. The immigrant landing place at Levis in respect to immigrants booked for transport by the Grand Trunk Railway.

5. The whole shall be under the directions of the minister of agriculture, in virtue of the provisions of chapter 68 of the Revised Statutes, entitled "An act respecting quarantine."

That you may understand the situation, I will explain in detail what constitutes the various plants which are known under the general title of "the St. Lawrence quarantines." They are four, viz:

1. RIMOUSKI.

This is a boarding station near the mouth of the St. Lawrence, where the royal mail is taken off and first-class passengers landed. At the same time a general inspection of the ship is made without detention, and the condition, if unfavorable, is wired to Grosse Isle for information of the regular inspecting officer.

2. GROSSE ISLE.

Grosse (originally Grâce) Isle is 31 miles below Quebec, in the middle of the River St. Lawrence, which at that point is 12 miles wide. The island is approximately 1½ miles long, a half mile wide, and contains about 700 acres. It was first used by the Dominion authorities as a quarantine station in 1832, when it was administered as such by the military forces of the British Government. In time the actual professional work was placed in the hands of a civil appointee, and then by degrees the military establishment relinquished control to the civil government, and it has now been for many years under the charge of the department of agriculture, forming the principal feature of the several stations known collectively as the St. Lawrence quarantine.

The Grosse Isle quarantine is under the charge of a superintendent and a staff of 21 assistants, constituting the permanent force under normal conditions. The principal officials are Frederick Montizambert, M. D., F. R. C. S., medical superintendent, and Frederick W. Church, M. D., and Joseph V. Coté, M. D., assistants.

The present superintendent has been in charge of the station since 1869, having served three years previously as assistant to a former superintendent. This long service and its practical results are so well known to the sanitarians of America that any words of introduction from me would be unnecessary.

The island itself is well suited for its purposes, being so conformed that it has been readily adapted to the plans of its administrators into the three artificial divisions that exist to-day—the sick, central (executive), and healthy. In fact, the entire sanitary defense of Canada, as her commerce is now carried on, is of an ideal character, being controlled by this one sentinel in her one great water avenue during the summer (the ordinary quarantine season), by which every foreign vessel must pass to reach her great ports, Montreal and Quebec. The three divisions of Grosse Isle will now be considered in turn. (See map.)

I. Central (executive) division.—The middle third of the island contains the residence and office of the superintendent, the barracks for the crew and families of the boarding steamer, bakery, stables, and several outbuildings, Roman Catholic chapel and priests' residence, Episcopal chapel and rectory. These two chapels were erected by the Dominion Government for the use of the permanent and temporary residents. The superintendent's office is connected with several points about the island by telephone to facilitate the transaction of business and also by telegraph with Quebec. He receives through the signal and telegraphic service of the Dominion, every morning and evening, reports of the movements of incoming vessels as soon as they are sighted in the Gulf of St. Lawrence or at the mouth of the river, and can thus, many hours ahead, calculate upon their probable arrival at Grosse Isle. This division has a short wharf used by the boats of the station for landing of supplies, residents, and those destined for the sick division. A fine ambulance, constructed after designs by Dr. Montizambert, is in service for this division, and I noted the prompt response to the call for it by whistle from the boarding tug, on the day of my visit, when a patient from a passing ship was brought ashore. All the buildings in this division are well adapted to their purposes.

II. Sick division.—This is on the easterly end of the island, and its limits are indicated by a dividing fence and stile, which is guarded by the quarantine police to prevent intercommunication when the division is in commission. The buildings on it consist of a hospital, steward's and orderlies' quarters, cholera lazaretto, barracks for detained relatives of patients, disinfecting buildings, washhouses for hospital and lazaretto, and storehouses. The hospital is a brick building (erected 1879) of two stories, made to accommodate 100 beds. It has four wards of 20 beds each, and smaller rooms for officers or for cases requiring the seclusion of a private ward. The ward furniture consists of iron cots provided with straw bale mattresses which are burned after use. It has the usual administrative, dispensary, and subsistence arrangement and is operated by the usual routine methods familiar to administrators of public institutions. At present there are but three cases in the hospital, all of a temporary and noncontagious character. The floors and inside work are of soft wood, and it is plastered throughout. It is well adapted for the purpose, has light and airy wards, and is sufficiently ventilated.

The cholera lazaretto is a very old wooden building, about 75 feet long, of one story, peak roof, roughly constructed, whitewashed, and at present unfurnished. The other buildings in this division require no extended description. The disinfecting buildings are small wooden structures, used in part as store sheds, of which portions have been fitted up with new board linings and otherwise tightened to secure imperviousness for sulphur dioxide fumigation. A special apparatus for fumigating letters written by patients is a part of the arrangements in this division to prevent the spread of contagious disease. It is probable that several of the old buildings in this section will soon give way to new ones as the modern development of the station progresses. They were built and located at a time when sanitary science was in its formative period, while now a regard for convenience of administration will doubtless bring them into more compact relations, as the developments of our knowledge of the nature of contagion has taught us to deal with it less at arm's length. A crematory furnace for the disposal of bodies of persons deceased from cholera, and other purposes, a small steam sterilizing chamber, and laundry plant for the lazaretto will undoubtedly suggest themselves for this section as it is in turn reached in the evolution of the island from its primitive form of pesthouse to that of a scientific sanitary station.

III. Healthy division.—It is gratifying to turn to this section, where the signs of growth are more than evident. Much has already been done here that will give great satisfaction to the health authorities of Canada and the United States, and that which remains to be finished is in such a state of advancement that the practical results could be immediately tested should the emergency arise. The inclemency of the spring, the ice blockade in the river, and the inevitable slowness of contractors have combined to delay the expected completion of contracts which were limited to the first days of May for their expiration. This will account for the numerous statements of what is to be done in the following account of this division:

The principal buildings in this division, which is on the west end of the island, are the steam disinfecting plant, the lavatory, the cabin passengers' hotel, the intermediate and steerage detention barracks, residence of the medical assistant, landing wharf, police headquarters, and sundry storehouses.

Steam disinfecting building.—This is a new wooden structure at the shore end of the wharf. Rails with switches are laid upon the wharf leading to the building, and the iron carriages run from the dock to the steam chambers, three in number. These chambers are placed side by side, each 25 feet long by 8 feet 6 inches square. They are constructed of boiler iron, closed at both ends by iron doors, whose shell is also supplied with steam, as hereafter noted. A Knowles vacuum pump operates all three chambers by a system of valves arranged to separate those not in operation from the one to be used, and when the vacuum has been secured the live steam is supplied by three high-pressure 40-horse-power horizontal steel boilers of a tested pressure of 170 pounds, but certificated to be run at 120 pounds.

The doors are supplied by steam in their shells through special piping leading to them and terminating in 7-ply rubber hose, so that the doors can be opened and shut without the necessity of couplings. The steam chambers are the same as those in use at the Louise embankment and are supplied with pressure gauges and thermometer, and will have electrical contact thermometers and registration dials forthwith to complete the contract. The building is divided laterally to make an infected end in which the articles enter, and a noninfected end from which they are taken out. In the infected end in the second story there are in process of erection twelve baths with shower attachments, to be equally divided for use between the sexes. After the passenger has been personally cleansed he passes to the noninfected end in the same story, over the steam chambers, to receive his sterilized clothes, which have been passed through the chambers while his bath is in progress, or he remains there until his outfit is returned to him in case it consists of but the suit he wears. The building and machinery is in readiness for practical operation although it still lacks a few of the minor details of construction noted above to pronounce it complete. It has a feed pump and large settling tank. Here also is a mercuric chloride tank for drenching wire trunks and containers, and a soapstone tank for articles requiring immersion.

Cabin passengers' hotel.—This is a wooden building located on a rocky bluff, 400 feet from the wharf, and is arranged with 54 staterooms, and 11 large rooms to accommodate 128 persons, two beds in a room. It is fitted with bath tubs, washout hopper closets, hot and cold water. The arrangements for the kitchen are good, and, with a large assembly or sitting room, warmed by open fireplaces at either end, and a balcony overlooking the St. Lawrence, the saloon passenger whose misfortune it may be to come over on an infected ship will find his lines fallen in pleasant places if he is destined to make a stay at Grosse Isle.

The lavatory.—This is an old building which was formerly fitted up with old-fashioned wash boilers surrounding four large chimneys situated equidistant in the interior. One end has been set off for laundry purposes, utilizing the old boilers and set wall tubs of wood when the clothing of the intermediate and steerage is washed. The next compartment has been fitted up by Dr. Montizambert for a bacteriological laboratory, and this room and the succeeding compartments are divided by corrugated galvanized-iron walls 10 feet in height. The space above under the roof being open, access from one room to another or inspection over these walls is prevented by wire netting securely fastened to the top of the iron partitions. The next three divisions in the building are 3 bath and water-closet compartments, 6 baths and 8 closets in each, making a total of 18 tubs of iron porcelain lined, supplied with hot and cold water, and 24 earthenware wash-out closets operated by separate service boxes. These boxes are automatically filled from the water tanks overhead, which are supplied by a steam pump drawing directly from the St. Lawrence a few feet in front of the building.

The main trunk of the discharging sewer is controlled by a gate valve. This was put in by Dr. Montizambert for use in case of the development of a number of suspected or infected cases—cholera or typhoid fever. The gate would be closed, and a disinfecting solution poured down to sterilize the evacuations of the users until it was found to be necessary to scour it out by the accumulation of collected material. All these bath and water closets are built of this corrugated iron sheeting, and the old floors have been covered with smooth galvanized iron, soldered to prevent leakage, dipping toward the center, where small outlets take off surplus drippings to the ground beneath. Three tanks of bichloride overhead in this building have leaders of hose, and the walls and floors can be thoroughly washed when necessary. It is a most admirable arrangement, and the only wish, not criticism, that one could make about it, is that these modern appliances and improvements could have been put in a building erected for the purpose. It is like "putting new wine in old bottles," and in view of the rapid decay of these wooden structures in this climate, it will probably require constant repair outside to support the interior work properly as time goes on.

Detention buildings.—There are eight detention barracks of considerable age, dating back to the early days of the station. They are roughly built, unpretentious shells, whitewashed inside and out, but still showing evidences of their antiquity. Six of them, accommodating 250 persons each, or a total of 1,500, are devoted to the steerage passengers. They are fitted with galvanized-iron adjustable berths, two in a tier, similar to those used by some of the transatlantic lines in their immigrant passenger steamers. A general wash room will be in each building. Two of the detention barracks have been set aside for intermediate passengers, accommodating about 200, and the improvements interiorly are now about completed. They consist of new flooring and subdivision of the space into staterooms made by wooden partitions to the height of the plates, protected overhead by wire netting to prevent intercommunication over the top. Each room has a standing washbowl. A central room for dining is arranged in each barrack. Dry earth-closets for males and females are at opposite ends, the sexes being separated likewise in the assignment of rooms.

These barracks are not well located, being in low ground, and thus incapable of drainage whenever a water-supply system becomes an accomplished fact on the island. But it would seem that it would not be wise to expend a large sum of money in putting modern plumbing into buildings which can not last long at best, and when they come to be rebuilt, as they must, they will be undoubtedly relocated with reference to drainage facilities.

Water supply.—Unfortunately for the completion of this finely-arranged station, it has no artificial water supply. Water for potable or other purposes is now drawn from dug wells, and for laundry purposes from the river. But it is gratifying to add that the Dominion government has instituted measures to provide for this deficiency. Two artesian wells are now being driven, the contractor arriving the same day as myself, and he has engaged to drive 1,000 feet to reach water, for potable purposes principally. In addition to this, two Worthington pumps have been set up on the wharf. They deliver river water to a 50,000-gallon tank on an eminence in the healthy division through a 4-inch pipe, and thence it will be distributed to the buildings in that portion.

As an auxiliary supply, a condenser and aërator in the boiler building at the head of the wharf purifies the river water for potable purposes, of the capacity of 2,000 gallons per day. "Pasteur" filters are supplied to each building.

Deep-water wharf.—Another pressing need of the station is a deep-water wharf to which the large steamers can come and be docked when infected. At present the passengers would have to be transferred by one of the steamers belonging to the station, and if the weather happened to be stormy it might cause serious delay. Dr. Montizambert has recommended this improvement to his Government, but it has not yet been acted upon.

Steamers.—There are two vessels, viz:

First, *Challenger:* She is the regular boarding and inspecting boat, and is of the following dimensions: Eighty-eight foot keel; 93 feet over all; draft, 7.6 feet; 18-foot beam; tonnage, about 96. She is of the seagoing tug type, and is a model boat for the purpose, similar to the United States quarantine steamer *Foster.* She has been fitted with a small hospital room for removal of noninfectious cases from vessels not required to be kept in quarantine. She has a steam-disinfecting attachment for disinfecting the ship's hospital from whence the case is taken, and a mercuric chloride sprinkler for completing the work of disinfection.

Second, *Druid*: A side-wheel steamer, 160 feet long, temporarily transferred from the department of marine and fisheries to the quarantine service. She has a large mercuric chloride tank for drenching infected vessels, a sulphur blast furnace on deck for fumigating ship's hospitals, the holds and cargoes of vessels, and is used for a supply steamer and to land the passengers and effects of infected vessels on the island for quarantine detention. She is not entirely suited to the work, being a side-wheel boat, which makes her an awkward craft to run alongside of other vessels for disinfection purposes.

General remarks.—Comment upon such an elaborate plant as that above described must be of a favorable nature, and congratulations can be extended to the Government which has equipped it and to the guiding spirit of it all, who has, through a long service, brought it to its present efficiency. Although much remains to be done to complete the plans of Dr. Montizambert, yet the work is so far advanced that it can be clearly seen what the completed plan will be before another season ends.

An additional medical assistant has been appointed this year to increase the efficiency of the staff, thus relieving Dr. Montizambert of ordinary routine duties, as his own work has been materially increased this season in the supervision of the disinfecting stations at Quebec and Levis.

I was shown a small inclosure on the island, of about 2 acres, in which were buried between June and September, 1847, the bodies of 5,424 persons, the victims of typhus fever. They were refugee immigrants fleeing from the famine in Ireland in 1847 only to find a grave in America.

3. LOUISE EMBANKMENT (QUEBEC).

The general work of disinfecting the luggage of noninfected vesssels carrying immigrants has been done at this point during the present season, with the exception of those treated at Point Levis, as will be explained below. The Louise Embankment is an immense artificial basin, built of granite, projecting into the St. Lawrence, on which the Dominion government has erected the immigration buildings and on which the deep-water terminus of the Canadian Pacific Railway is laid to meet the transatlantic passenger traffic. At this place all the immigrants booked for transportation by this railroad disembark, and here the Dominion government has caused to be erected and set in place, under the direction of Dr. Montizambert, a complete disinfecting plant, constructed after the latest modern designs and improvements in maritime sanitation. The principal piece in this plant is an iron steam chamber 8.6 by 8.6 by 25 feet, having an estimated capacity of 24 average trunks.

It is provided with a pressure gauge, thermometer, registration dials, and when ready for use is exhausted by a Knowles vacuum pump. It has the usual wire cages operated on roller carriages, and the luggage goes in at one end, and after disinfection is removed at the other, where it is labeled with a baggage tag prepared for use, with a punch to designate the place, time, and kind of treatment given. The next portion of the plant is the sulphur dioxide chamber, where leather, fur, and similar goods are treated. It is provided with wire racks, and is fed by a furnace, a cooling receiver tank, and a Sturtevant blower. The next portion of the plant is the mercuric bichloride tank, of a capacity of 500 gallons, which is used for spraying the rooms after a ship's load has been treated, and for cleansing and disinfecting boxes, chests, etc. Supplementary to this the attendants apply the same solution (1–700) to the containers with a large flat brush from a supply in buckets.

4. POINT LEVIS.

This place is directly opposite the city of Quebec, on the south side of the St. Lawrence River, and is the terminus of the Grand Trunk Railway, the competitor of the Canadian Pacific Railway for the immigrant traffic to the northwest. As soon as the passengers disembark at the Louise Embankment those booked for the Grand Trunk are separated, with their baggage, and transferred by a steamer across the river to the terminal dock at Point Levis. This dock is a long L-shaped structure, easily isolated from the shore, if necessary, and is similar to but smaller than the one at Quebec.

The Grand Trunk officials secured permission from the government to disinfect their own passengers at this point, provided they would prepare an apparatus satisfactory to Dr. Montizambert. These officials have constructed a steam disinfecting plant in two box cars, provided with steam coils for heating the interior to a point above 100° C., and then live steam is introduced from a stationery boiler, and the same process is enacted as at Quebec, minus the vacuum and the pressure. The containers are rinsed outside with the mercuric chloride, as previously described, and a car has also been prepared for sulphur fumigation, supplied by the combustion of the rolls in kettles placed within. This plan has the approval of Dr. Montizambert, and is operated, like the others, under his direction and the supervision of assistants.

STEAMER LINES TO QUEBEC.

There are five regular lines of passenger steamers sailing to Quebec from European ports, viz:

Allan, weekly, Liverpool via Moville; Dominion and Beaver, both weekly, Liverpool direct; Allan, weekly, Glasgow direct; Hamburg-American Packet Company, weekly, London, Hamburg, and Antwerp.

Statement of steerage passengers landed at the port of Quebec during the months of May, June, and July, 1893, bound for the United States.

MAY.

Steamships.		Adults.		Children.		No. of souls.	Nationalities.								Occupations.							
Number.	Name.	Male.	Female.	Male.	Female.	Total.	English.	Irish.	Scotch.	German.	Scandinavian.	French and Belgian.	Other countries.	Total.	Farmers.	Farm laborers.	General laborers.	Mechanics.	Clerks.	Domestics.	Not classified.	Total.
1	Lake Huron	63	20	16	9	108	20			6	56	7	19	108	2	4	38	19		10	35	108
2	Sardinian	204	83	15	35	337	55			15	261		6	337	15	8	166	14	1	45	88	337
3	Pickhuben	218	160	55	72	505	1			364		140		505	22	49	130	15	2	7	280	505
4	Lake Winnipeg	42	11	1	1	55	6			6	28	2	13	55	2	9	23	8		5	8	55
5	Toronto	138	30	18	21	207	20			26	77	31	53	207	4	14	120			8	61	207
6	Sarmatian	304	88	40	30	462			41	15	393	8	5	462	3	81	218	1	1	45	113	462
7	Labrador	382	137	55	31	605	41			29	465	7	63	605		25	357			65	158	605
8	Laurentian	445	196	64	68	773	17	4		49	529	29	145	773	1	104	340			111	217	773
9	Hibernian	2	1		2	5			5					5		1	1				3	5
10	Lake Superior	78	24	3	5	110	21			3	61	8	17	110		10	51	17		14	18	110
11	Stubenhauk	273	153	71	69	566				399		167		566	20	25	228			22	271	566
12	Parisian	261	118	47	34	460	63	8			389			460	10	53	198			56	143	460
13	Buenos Ayrean	285	123	35	37	480			1	38	325		116	480	5	80	200			50	145	480
14	Wandbram	256	110	56	66	488				359		129		488	4	34	200	18		19	213	488
15	Sarnia	155	15	26	12	208	4			21	143		40	208	5	40	110				53	208
16	Lake Nepigon	67	18	15	6	106	5				95		6	106	2	20	25	20		6	33	106
17	Vancouver	265	63	24	22	374	17		1	8	307		41	374	8	40	216	1		27	82	374
18	Circassian	215	100	37	25	377	14	1			348	8	6	377	2	51	160	2		44	118	377
19	Baumwall	323	107	56	55	541	6			230		305		541	6	95	215	6	1	24	194	541
20	Lake Ontario	214	44	29	7	294	40			31	95	2	126	294		10	190	14		23	57	294
21	Pomeranian	1	1			2			2					2			1			1		2
22	Numidian	349	198	56	44	647	16	1		68	484	9	69	647	4	50	290	5		94	204	647
23	Slavonia	245	109	61	54	469	13			284	10	162		469	10	27	200	8		25	199	469
	Total	4,785	1,909	780	705	8,179	359	14	50	1,951	4,066	1,014	725	8,179	125	830	3,677	148	5	701	2,693	8,179

JUNE.

24	Oregon	272	58	57	33	420	12			52	285	9	62	420	5	40	221	5	1	2	146	420
25	Manitoban	7	6	4	2	19			4	15				19	1	1	4		1	3	9	19
26	Lake Huron	55	25	6	6	92	8			14	70			92		15	39	1		13	24	92
27	Sardinian	284	142	42	40	508	22	4		6	425	4	47	508	11	30	225	17	1	84	140	508
28	Carthagenian	4	1	0	6	11			11					11	1		3				7	11

29	Toronto	139	21	24	19	203	2	.....	.....	17	81	11	92	203	1	19	113	.....	6	6	58	203
30	Lake Winnipeg	42	10	9	4	65	16	.....	.....	.....	27	.....	22	65	5	5	31	1	.....	1	22	65
31	Labrador	288	72	77	44	481	20	2	.....	.....	424	.....	35	481	5	70	210	.....	3	25	168	481
32	Mongolian	262	142	75	62	541	36	5	.....	1	386	28	85	541	7	69	185	1	.....	57	222	541
33	Lake Superior	46	26	8	2	82	5	.....	.....	11	49	9	8	82	2	8	32	4	.....	8	28	82
34	California	265	105	36	42	448	.....	.....	.....	100	.....	64	284	448	7	39	210	8	1	15	168	448
35	Sarmatian	5	7	1	0	13	.....	.....	13	.....	.....	.....	.....	13	.....	.....	3	2	.....	2	6	13
36	Parisian	271	165	51	42	529	41	5	.....	12	457	13	1	529	7	50	214	.....	.....	62	196	529
37	Pickhuben	201	112	51	52	416	.....	.....	.....	227	.....	73	116	416	14	16	156	12	3	23	192	416
38	Sarnia	132	28	25	31	216	20	.....	.....	21	130	7	38	216	2	24	97	.....	9	3	81	216
39	Lake Nepigon	36	18	4	13	71	3	.....	.....	.....	57	.....	11	71	2	5	29	.....	.....	1	34	71
40	Vancouver	129	45	26	24	224	14	2	.....	.....	202	.....	6	224	20	23	83	.....	3	18	77	224
41	Laurentian	212	134	54	43	443	15	.....	.....	18	374	9	27	443	6	30	176	.....	.....	69	162	443
42	Lake Ontario	58	25	11	11	105	7	.....	.....	19	76	3	.....	105	1	10	47	.....	.....	3	44	105
43	Polario	196	113	58	42	409	9	.....	.....	244	.....	71	85	409	11	17	159	7	2	26	187	409
44	Pomeranian	2	2	.....	.....	4	.....	.....	4	.....	.....	.....	.....	4	2	.....	.....	.....	.....	.....	2	4
	Total	2,906	1,257	619	518	5,300	230	18	32	757	3,043	301	919	5,300	110	471	2,237	58	30	421	1,973	5,300

JULY.

45	Numidian	238	144	62	62	506	24	.....	.....	6	250	6	220	506	14	36	188	.....	.....	84	184	506
46	Oregon	138	42	25	27	232	4	.....	.....	.....	209	.....	19	232	4	12	122	.....	.....	21	73	232
47	Lake Huron	24	14	10	5	53	16	.....	.....	17	20	.....	.....	53	.....	.....	21	3	.....	1	28	53
48	Stubenhauk	186	156	106	92	540	.....	.....	.....	261	11	16	252	540	39	14	120	6	4	29	328	540
49	Sardinian	168	130	61	37	396	20	.....	.....	14	282	7	73	396	8	21	138	1	.....	53	175	396
50	Lake Winnipeg	21	3	3	2	29	3	.....	.....	20	6	.....	.....	29	.....	.....	21	.....	.....	.....	8	29
51	Toronto	43	10	9	4	66	1	.....	.....	1	57	3	4	66	.....	8	28	2	5	2	21	66
52	Grimm	107	87	46	23	263	2	.....	.....	87	.....	.....	174	263	5	8	87	3	3	26	131	263
53	Manitoban	2	4	.....	2	8	.....	.....	5	.....	.....	.....	3	8	.....	.....	.....	1	1	3	3	8
54	Labrador	129	57	24	18	228	41	2	.....	15	124	9	37	228	.....	10	112	2	5	11	88	228
55	Mongolian	127	107	34	41	309	11	1	.....	2	201	1	93	309	3	13	108	1	3	34	147	309
56	Baumwall	76	65	33	38	312	.....	.....	.....	95	.....	10	107	212	4	11	50	9	2	18	118	212
57	Lake Superior	34	21	8	11	74	28	.....	.....	10	36	.....	.....	74	.....	4	26	6	.....	7	31	74
58	Siberian	2	1	1	1	5	.....	.....	5	.....	.....	.....	.....	5	.....	2	3	.....	.....	.....	.....	5
59	Parisian	181	99	40	35	355	80	3	.....	.....	172	4	96	355	10	12	159	.....	.....	45	129	355
60	Slavonia	96	56	38	37	227	.....	.....	.....	169	.....	20	38	227	13	5	70	7	1	15	116	227
61	Sarnia	52	20	6	3	81	11	.....	.....	.....	51	.....	19	81	.....	3	49	.....	.....	10	19	81
62	Vancouver	72	44	22	16	154	20	.....	.....	6	128	.....	.....	154	28	10	28	1	5	16	66	154
63	Laurentian	125	66	23	22	236	8	.....	.....	9	172	6	41	236	24	33	70	.....	.....	35	74	236
	Total	1,821	1,126	551	476	3,974	269	6	10	712	1,719	82	1,176	3,974	152	202	1,400	42	29	410	1,739	3,974

IMMIGRATION STATISTICS.

Nearly 30,000 immigrants have passed the St. Lawrence quarantines this season to August 1, viz: May, 13,653; June, 9,095; July, 6,808; total, 29,556. Of this number 17,453 were destined for the United States according to the compilations of the immigration bureau at this port. To the minister of the interior, who has charge of this branch of the public service, and to Mr. P. Doyle, the superintendent of the office at Quebec, I am indebted for the statistics which accompany this report in respect to the volume, character, nationality, and sex of the immigration passing through this place.

From observation and some computations at different times, it is a safe calculation to reckon between two and three pieces of luggage for each immigrant, and it may be approximately estimated that about 70,000 pieces have been steam disinfected in the three months covered by this report. Based upon this, about 45,000 pieces have been inspected and tagged by myself and assistants and about 15,000 personal certificates issued to the immigrants for the information of inspectors on the border.

From the first I used the ordinary commercial shipping tag for affixing to the disinfected luggage, my assistants tying it on after the process was completed. Later my attention was called by the manufacturers to the lead seal and wire attachment used by the Department of Agriculture by inspectors of meat for affixing their certificates. After a trial I was so favorably impressed with it that I ordered a supply at once. As soon as the Dominion authorities saw it, the minister of agriculture, who has charge of the quarantine, immediate directed its adoption for their stations, and it is used now by them and myself in affixing our certificates of disinfection. It is a safeguard against fraudulent substitution, loss of the tied tag, and, while as easy of application, has an "official" appearance that is not the least recommendation.

There have been no special difficulties to overcome. The work here being done by the Dominion Government in a most thorough and scientific manner, has left no room for criticism. The duties of my assistants and myself have therefore been largely routine, confined to attendance at the arrival of steamers, general inspection of the immigrants, and observation of the process of disinfection, and when finished, the issuance of certificates and the tagging of baggage. With an occasional instance here and there, sometimes from loss of certificate, or sometimes from the failure of the immigrant to get one, through ignorance, a few have been detained at the border for investigation. In most cases, as far as I can learn, these persons had either lost my certificate, or, as stated, had failed to procure one. Among the thousands this was inevitable, but the border States, with the exception of Michigan, have honored the work done at the St. Lawrence quarantines at its face value. The Michigan State board of health early in the season began to interpose petty restrictions upon travel, and even went to the unnecessary trouble of putting the luggage through a sulphur fumigation in order to comply with some of its rules. But the absurdity of it was so evident that after enforcing it for a few weeks and delaying trains, this unreasonable obstruction was allowed to pass into "innocuous desuetude." For the past six weeks or more there has been no interference or failure to accept the certificates of disinfection issued here.

During my service here I have been the recipient of the greatest courtesies from the officials of the Dominion Government with whom I have had dealings. I ought first to acknowledge my deep obligations to Dr. Frederic Montizambert, F. R. C. S., the superintendent of the St. Lawrence quarantines, for many official kindnesses. I have been afforded every facility for the performance of my duties. The officials of the two railroads, the Grand Trunk and the Canadian Pacific, have been uniformly courteous and helpful to my assistants and myself, assigning rooms in their buildings and furnishing them for our use.

The immigrant officials, particularly Mr. Doyle, the superintendent, should be mentioned as having been of material aid to us. The U. S. consulate has been, by the favor of Hon. Frederic M. Ryder, the present incumbent, my headquarters, and I am indebted to him for more than the usual courtesies of his office.

My assistants, Dr. William G. Stimpson, of this Service, who was with me for two months, and Dr. Irving C. Rosse, of Washington, have performed their duties promptly and to my entire satisfaction.

Very respectfully,

CHAS. E. BANKS,
Passed Assistant Surgeon, M. H. S.

REPORT OF PASSED ASSISTANT SURG. J. H. WHITE, DETAILED FOR DUTY AT HAMBURG.

HAMBURG, GERMANY, *August 1, 1893.*

To the Surgeon-General U. S. Marine-Hospital Service, Washington, D. C.:

SIR: In compliance with orders contained in Bureau circular of July 6, 1893, I beg to submit the following report of service at Hamburg from April 1 to July 31, 1893, inclusive.

Arriving here March 29, 1893, and finding regulations to have been so posted as to take effect April 4, 1893, I devoted the interim to seeing such things as might be of value in connection with the work here.

Assistant Surg. Rosenau, then here, rendered me much aid and gave much information in this line. Together we visited the Stadt disinfectionens Anstalten, the barracks for emigrants, the public water-boiling establishments, and the private sulphur disinfection places, all of which will be described later.

I also visited the hotels and boarding houses where emigrants from noninfected localities were and still are housed. There were thirty-seven of these houses, and while some of them were not at all what one could call first-class houses, they were for the most part clean, and for the class they accommodated very good—some of them were excellent.

None of them had, however, any means for disinfection of people's luggage, and very few indeed had any bath arrangements.

The people from infected localities were housed in barracks built by the Hamburg American PacketCompany in the spring of 1892, and consisting of a long, low, shed-like building, containing sleeping accommodations in double tiers for about 100 people in each of the eight subdivisions.

When first visited these barracks, I should say, held upward of 1,200 persons; consequently they were overcrowded, and certainly they were dirty. It could not be otherwise, for there are exactly six bath tubs and one small steam disinfecting chamber, this latter about 225 cubic feet capacity, and no laundry arrangements at all to provide clean bodies, sanitary clothing, and clean clothing for such an assembly.

This institution, under the charge of a police inspector of Hamburg, has, since the strain of overcrowding was removed, in May last, done very good work indeed; before then they simply could not, try they ever so hard.

The people presenting themselves for embarkation from barracks then were very dirty, and large numbers of them were lousy, both as to heads and bodies. Now such is not the case, and, though many are still dirty, none are lousy, all having had their bath and proper attention paid to such heads as contained vermin.

Again, it is a source of satisfaction that the danger of an outbreak of any disease of contagious nature is now so minimized, and with only 300 to 400 people on his hands, the barrack's surgeon, Dr. Kierstein, is enabled to eradicate many trivial skin diseases which hitherto time did not allow him to reach.

Altogether these barracks (which have been at the suggestion of Surg. Wheeler provided with a wash shed for the encouragement of cleanliness, where also the apartments to be occupied at night are emptied during the day, and *vice versa*) send up for examination on the day of sailing a far more decent class than formerly, and for the few people now going do very well.

The plan pursued in the inspection of emigrants is practically the same to-day that I found to exist upon my arrival here, to wit:

At a time set by the company, usually two or three hours preceding the sailing of the ship. all emigrants are gathered at a building on the Elbe known as the Passagiere Hallen. There they are passed in defile before Dr. W. L. Homann, police surgeon, who examines in the interest of Hamburg; Dr. George W. Nash and formerly Dr. Ed. Müller, in the pay of the Hamburg American Packet Company, and lastly, one of my assistants and myself.

It can not be claimed that this is a thorough examination; it is only approximately so; and while many cases of all sorts, even including hernia, are discovered and some rejected, many more must pass entirely unobserved.

Wishing to make as few innovations as possible at first, I only introduced a card printed in semblance of an American ensign, upon which a certificate signed by myself was also placed asserting that the bearer was inspected and passed. Each card bore its specific number, and by this device I numbered the people until I later received the registration punch.

This card was finally superseded by the card issued now under the immigration law, which latter I supply in blank to the company, who issue the same, and they are stamped by my assistant as I pass the emigrant at the final inspection with my name and the date of the inspection.

While I see ample room for a vast improvement in my inspections of both persons and baggage, I can not possibly put my views into execution, except it be when such barracks are provided as will enable me to pursue the same admirable plan now pursued by Passed Assistant Surg. Woodward at Rotterdam.

Such barracks the company have promised to construct, and I have the pleasure to submit a plan of the same herewith and to state that they promise to build at once if the necessary formal consent is given by the senate of Hamburg.

Upon my arrival I found that no examination or disinfection of luggage whatever was being done, and this very question has been and still continues one of the chief difficulties of this post.

Little by little I have succeeded in improving this part of the work, and although there is an iron lighter lined with wood to prevent radiation and supplied with steam by a tug now set apart for this work we can barely attain 100° C. therein, and can not be assured that we attain that uniformly over the whole lighter. This again will be set right by the construction of adequate barracks.

As to inspection of ships and their crews, I found that Consul W. R. Estes had designated Dr. W. L. Homann to inspect the crew of each vessel; no one was appointed to inspect the vessel.

Soon after I entered upon my duties certain masters of vessels complained to me that they felt it a hardship that they must pay Dr. Homann $5 for the inspection of crew and Consul Estes $2.50 for certifying the same, when I was also inspecting for the United States.

Upon their seeming to blame me for this I represented these facts to Consul Estes in a note, in which I informed him that, feeling myself competent to perform the duties which I was ordered here to do, I felt that I must state to him, for my own protection, that he, if continuing Dr. Homann's examinations, did so of his own volition.

There is an inspection of food supply for passenger steamships made here in each case by the Hamburg authorities, and, as my inspection on this point can only amount to an approximate knowledge of this matter, I have fortified myself of late by obtaining from these gentlemen (the "Auswanderer Behörde") a sworn statement of the quantities of each article delivered on board in their presence.

I inspect the vessel as to all requirements of the law in case of passenger ships, and in case of freighters sometimes I also inspect, but for the most part I am compelled to relegate these to my assistant, Dr. J. T. Mitchell.

The inspection of freighters, and more especially British vessels, has been fraught with a great deal of difficulty, as these vessels make no effort to have their crew ready, and have, I am positive, many times substituted men from ashore for absent members of the crew, making my inspection thereby a farce.

As to inspection and disinfection of merchandise, I can not do better than append a circular compiled from the quarantine law and regulations.

At the suggestion of Consul Estes some portions of the law were copied verbatim, and he signed the circular with me.

This circular was printed in both German and English, and was widely circulated among shipowners, shippers, *spediteurs*, and merchants.

REVISED CIRCULAR.

For the more convenient inspection of vessels, their cargoes, and crew, when bound for any port in the United States, it is desired that all shipowners and shippers will observe the following requirements, which are necessary under the new quarantine law of the United States, now in force.

Notice must be given to the consulate in each case in writing of the sailing date and place of departure seventy-two hours before sailing, and facilities for inspection furnished the medical inspector.

All vessels at any foreign port clearing for any port or place in the United States shall be required to obtain from the consul, vice-consul, or other consular officer of the United States at the port of departure, or from the medical officer where such officer has been detailed by the President for that purpose, a bill of health, in duplicate, in the form prescribed by the Secretary of the Treasury, setting forth the sanitary history and condition of said vessel, and that it has in all respects complied with the rules and regulations in such cases prescribed for securing the best sanitary condition of the said vessel, its cargo, passengers, and crew; and said consular or medical officer is required, before granting such duplicate bill of health, to be satisfied that the matters and things therein stated are true.

"Any vessel clearing and sailing from any such port without such bill of health and entering any port of the United States shall forfeit to the United States not more than $5,000.

"The bills of health herein prescribed shall be considered as part of the ship's papers, and when duly certified to by the consular officer or other officer of the United States, over his official signature and seal, shall be accepted as evidence of the statements therein contained in any court of the United States.

"Preliminary to the issue of such document the vessel shall be inspected by the consular or medical officer.

"The quarantine officer shall at once after a vessel's arrival in a port of the United States demand from the master the prescribed bill of health. Should the vessel have no bill of health, she shall be detained and the fact reported at once to the collector of customs."

As far as possible a classification of cargo in accordance with list below will be observed, and shippers are notified that a compliance with the requirements given in each case is necessary to the furnishing of a bill of health and consular invoices.

Class A.—Requires neither inspection nor disinfection, if properly cased to prevent moisture incident to shipment, and consists of:

All new and dry textiles (wool, cotton or linen), musical and scientific instruments, new furniture, ales, wines, liquors, live animals, cane and rattan ware, books and printed matter, china, glass, porcelain, precious stones and jewelry, fancy goods, toys, art goods, grains, plants and seeds, India and hard rubber, ivory, leather and leather goods, manure salt and kainit, metal, metal goods and hardware, explosives, Portland cement, salt, silks, tobacco and cigars, and such others as may be added hereto from time to time by the medical inspector of the U. S. Government. This class applies to absolutely new goods only.

Class B.—Shipping permits must be obtained from medical inspector in all cases for articles belonging to this class, which is subject always to inspection, and, if need be, disinfection—decision resting with the undersigned. This class should therefore be listed if possible three or four days prior to sailing in order that no delay may be caused the shipper or the vessel.

Sugar of all kinds, coffee, bristles, feathers if new, horse and other animal hair, unmanufactured wool, canned food stuffs of all kinds, dextrine, dried fruits and vegetables, eggs and albumen, fresh fruits, moss and moss litter, rags, jute, gunny, rawhides and skins, rennets, guts, and bladders, wood pulp and cellulose. All secondhand goods without exception, and all others not included in Class A or Class C.

Class C.—Articles which are forbidden entry into the United States while any infectious or contagious disease exists in Europe.

Secondhand goods, such as upholstered furniture, feather beds, down quilts, clothing, except such as may be personal wearing apparel, accompanying owner.

It is desired (and the cooperation of shipowners and merchants is earnestly solicited in this direction) to increase the scope of Class A as much as possible, and to this end the careful and cleanly packing to secure dryness is solicited.

The disinfection in Class B, when required, will consist of steam when the same can be used, and articles which can be passed without disinfection from this class will be passed. Consular authentication of the origin of such goods from a noninfected locality will greatly facilitate such passing free and often obviate even an inspection.

Sugar and coffee under most circumstances will not be molested in the least.

The attention of passenger steamers is particularly called to Class C, which is principally intended to cover the dirty and dangerous household effects of steerage passengers, and it is requested that all such agencies be notified not to allow shipment to Hamburg of such matter, as the shortest way to stop this class of goods.

Shipowners and brokers will be required to present to the medical officer the manifest of the cargo of all vessels sailing for ports in the United States before the clearing of such vessels and the bill of health will not be issued until the medical inspector has satisfied himself as to the good sanitary condition of the cargo.

Goods shipped through the United States in transit to other countries are subject to the same regulations.

The object of this circular being to expedite commerce and not to delay, all shippers are earnestly requested to furnish invoices promptly, so that no delay may ensue.

This circular supersedes the one issued by the undersigned on April 4, 1893.

W. R. Estes, *U. S. Consul.*
J. H. White,
Passed Assistant Surgeon M. H. S., Medical Inspector.

In this connection I would say that finding a large amount of so-called disinfection being done, which was in my opinion not needed, and therefore an unnecessary check on commerce, I began to pass certain articles under a certificate that I considered them of a noninfectious nature, to wit: New clippings, new cotton waste, limed glue stock, limed cow hair, scoured wool (as distinguished from washed wool), absolutely dry hides, arsenicated dry hides, salted hides, salted guts in casks, dry rennets, dry albumen, and other similar goods, many of which were being put in original unopened packages into a room with a pot of sulphur and fumigated for six hours, and then given a certificate of thorough disinfection by a chemist.

This was surely both a farce and a fraud, and not wishing to be a party to either I declined to accept such certificates as evidence of disinfection.

Upon the subject of difficulties encountered and how overcome, I beg to be allowed to speak of these under the headings to which each belongs.

When, on May 29, it was officially reported that a sporadic case of cholera had occurred in Hamburg, I did not deem it necessary nor just to say that the city was infected, and subsequent events have justified that opinion, but, looking to the possibility that other cases might occur and quarantine restrictions be necessary, I consulted with the packet company as to what plan they could offer in such an event. They proposed that the *Scandia* should be placed at Brunshausen, a place on the Elbe 16 miles below this city, and be used as a floating barracks, which plan I accepted and cabled the same to the Department. Nothing more in the way of cholera occurring, however, that plan was never resorted to.

As to the present sanitary condition of the city of Hamburg, I may say that it is exceptionally good in all but one or two points.

The water supply, which was formerly one of the worst in Germany, if not indeed the very worst, is now very good indeed, and, though drawn from one of the foulest of rivers, it is so cleansed by filtration as to be of very fair quality, and in the light of recent developments, showing cholera bacilli in the river and none in the water after filtration, it would seem that there is ample ground for the assertions of Professors Koch and Dunbar, that the sand-filtration system now used by Hamburg and the same used before by Altona, is absolutely destructive of the said germs.

The water works, situated upon an island in the Elbe, about 2 miles above the city, draw the water from the Elbe itself at a point below low-water mark (tides rise and fall some 8 feet), and after it has passed several screens for removal of all heavy dirt and trash it is pumped into one of the sedimenting basins, of which there are four, having a capacity of 78,500 cubic meters each.

Here the water stands twenty-one hours, and is then allowed to flow of its own gravity into the filtration basins, of which there are eighteen completed and four under construction.

These basins are immense shallow pans, with sides and bottom water-tight; sides inclining outward at about 45°.

At the bottom, and immediately overlying the outlet openings, is a layer of cobblestones of about 20 cm. thickness. Overlying this a layer of very coarse gravel of 20 cm. thickness; above this another 20 cm. of finer gravel, and finally a top layer of fine clean sand of about 1 meter in thickness.

This material is all carefully washed in large revolving drums provided with jets of water, to remove all earthy and soluble constituents.

The water from the sedimenting basins is allowed to enter at the top of these filters and to enter very slowly, rate of speed being regulated by a very ingenious contrivance in the way of a flood gate, which closes itself when the water rises too rapidly.

Water stands 1 meter deep all over the filter and passes through the filtering medium at a speed of 63 mm. per hour—no more, no less—as it is claimed by the director of the Hygienic Institute that any greater speed would possibly destroy the efficiency of the filtration.

Leaving the bottom of the filters the water enters the city mains, where it loses any further interest in this connection.

The markets and marketmen are all under police control, and samples of any articles offered by them which the sanitary police consider objectionable are at once submitted to the Hygienic Institute.

The streets and lanes of the city are very carefully policed and kept in a most excellent condition.

So much, however, can not be said of the fleets or canals in the old part of Hamburg. They present at low water a hideous assortment of garbage, and, although their pollution is strictly forbidden, it still goes on. Another point is that they are filled by the Elbe, and the Elbe is full of sewage.

As to the sewers of the city, I can only say that they are considered excellent.

Assistant Surg. Rosenau having reported upon them already, any further report would be superfluous.

Plumbing is not at all up to modern ideas here, and there is therefore ample room for the sanitary inspection of the same. which I understand is to be instituted.

The Hygienic Institute, under the able direction of Prof. Dunbar (through whose courtesy I saw the water works), has done great good and will do more in the future, as under its direction the good points in the sanitary condition of the city will be accentuated and the bad eliminated.

Daily inspections are there made of the water in the river and in the water works. Experiments looking to the rendering of sewage innocuous are now in progress. Dr. Dunbar examines the stools of all suspicious cases, I believe, in person.

This Institute is also a school of instruction in bacteriology for all official physicians of the city.

The disinfection establishments existant in Hamburg may be divided into three classes:

(1) The Anstalten of the city, consisting of two establishments, each provided with two small steam cylinders (stationary) and another on wheels. These do excellent work and can be always relied upon. (2) The steam apparatus at the emigrant barracks, before mentioned, and the lighter of the packet company for baggage, also previously mentioned. (3) The sulphur disinfecting plants, of which there are several for disinfection of rags and feathers only, and which, being watched by my inspectors, I can assert to be good, as far as sulphur fumigation is good.

Then there are the private establishments, whose certificates I rejected because they fumigated the outside of barrels, etc.

I do not believe such disinfection deserving the name.

As regards rags, the article of all others shipped hence most to be watched, and the disinfection of same, I beg to submit below an exact copy of a letter on the subject written to Consul Estes by Consul-General W. H. Edwards, of Berlin, which expresses very fully and with force exactly the ideas I myself entertain on this subject:

"CONSULATE-GENERAL OF THE UNITED STATES,
"*Berlin, May 9, 1893.*

"W. R. ESTES, Esq.,
"*U. S. Consul, Hamburg.*

"DEAR SIR: In reply to your letter of the 6th instant I beg to inform you that you do not understand my position with regard to the rag business.

"I am most decidedly of the opinion that the disinfection of rags should take place at the seaports where the rags are put on board ship for shipment to the United States, and not at inland consulates.

"Besides, I go a step further, and hold that the disinfection of rags should take place under the supervision of the officers detailed from the U. S. Marine-Hospital Service, and that the shipment of rags to the United States should be restricted to those ports where we have such officers on duty.

"My reasons for this belief are as follows:

"No consular officer can possess any personal knowledge or possibly obtain any positive proof as to the origin of rags.

"He must at all times seek his evidence as to origin from the rag shippers.

"Whilst, on the one hand, they are usually very fertile in their declarations to the effect that the rags shipped were gathered in districts where quarantinable diseases do not prevail, they proceed, on the other hand, to assure consular officers, when demands are made for original bills showing place and time of purchase, that it is quite impossible to supply such proof, because the rags have, in the process of collection, passed through so many hands that it is quite impossible to trace their origin.

"No sort of an investigation undertaken by any consular officer can accurately trace or positively determine the origin of rags.

"In respect to the origin of rags consular officers are at the mercy of the rag shippers.

"Positive evidence or legal proof as to the origin of rags is narrowed down to what is practically whatever the shipper finds it convenient to say upon that subject.

"When you consider the fact that rag gatherers are constantly at work in every village on the Continent collecting for the principal dealers and shippers in the large cities of the Continent, you must admit that it is practically impossible for even a shipper to truthfully declare where the rags were collected.

"To illustrate, one bale when finally packed at Berlin for our markets may contain a thousand rags collected from a thousand different districts in Austria, Russia, and Germany.

"In view, therefore, of the fact that consular officers can not in any case obtain positive proof as to the origin of rags intended for our markets, I am of the opinion that the disinfection and shipment of rags should be restricted to those ports where we have representatives of the U. S. Marine-Hospital Service on duty.

"Every bale should be disinfected under their supervision and treated as if it came straight from an infected district.

"Most truly,

"W. H. Edwards,
"*Consul-General.*"

I could not more explicity treat the rag question than Consul-General Edwards has above done, and will simply add my unqualified assent to every word of his letter.

The vessels sailing hence for the United States solely as freighters are of all kinds of rig and of every nationality.

They are all duly inspected, as before stated, by my assistant or myself in compliance with the law, and no bill of health is issued until the freight manifest is produced and the character of cargo clearly seen and compared with the shipping permits issued by me, and the crew also duly inspected.

To personally see all the cargo is not only unnecessary but absolutely impossible, as I can well illustrate as follows:

There left this port in one day recently four vessels carrying an average of over 3,000 tons freight each, making a total of not less than 12,000 tons cargo, which one man, or even ten, could not inspect, and even did he do so it would be only the outside of packages that he could see.

These vessels are slow, as a rule, and very few carry more than a crew of 25 men, so that besides the fact that an impending outbreak of any disease on one of them would become a reality before they reached an American port, the small number of people makes them easy to handle, and I feel, consequently, fully justified in devoting most of my time after a careful supervision of freight invoices to the next class, viz, the passenger steamships.

There are two lines of steamships which carry passengers to the United States from Hamburg.

1. The Hamburg American Packet Company, which dispatches regularly two steamers a week to New York, one to Boston or Baltimore, one to Canada, with emigrants bound overland to the Western States of the United States.

2. The Sloman Line, which, with a fleet of four steamers, carries on in conjunction with the packet company what is known as the Union Line, each company sending a ship alternately once a week.

This makes from four to five steamers per week carrying emigrants.

The fast steamers or "Schnell dampfers" of the packet company, the greater part of the "Post dampfers" of same line, and the whole of the Sloman steamers, are well ventilated and have a sufficient air space, but there are some exceptions, as in the case of ships like the *Moravia* and *Rugia*, the ventilation and air space are interfered with by numerous wooden partitions put up so as to divide the steerage compartments into spaces for 16 to 20 persons each instead of 150 to 250 or more, for which they were originally intended.

Aside from interfering with ventilation these partitions increase the chances for accumulation of filth from not overclean people who occupy them.

Each of these ships is duly inspected by the authority of the German Empire and the Hamburg senate as to food supply, air space, and ventilation.

I inspect these in person as before stated.

So far as cleansing, food, and water supply is concerned I have no fault to find, and as to ventilation, I believe it to be all that is needed on all but two or three, and on most of them exceptionally good.

So much for the passenger ships. Of the passengers themselves, and of the way in which they are of necessity handled and inspected, I am sorry so much can not be truly said.

An earnest endeavor has been made to have all baggage inspected, and, where necessary, disinfected by steam, and I have employed to this end a competent young man whose sole duty is to do this work, and so cause no delay or inconvenience to the steamship companies.

The iron lighter for steam disinfection was prepared at my request.

A circular was issued to all the subagents of the company, requesting them not to send any baggage of the forbidden sorts, viz, old feather beds, down quilts, etc.

I refused to accept such goods as baggage, and a vast mass of it has accumulated here, which, if not disinfected and shipped, will be taken out of the hands of the company sooner or later, and then, having all the ports of Europe from which to select an unguarded door, will find shipment, and not only shipment but entry into the United States. In view of these facts I deplore the refusal of the Department to allow me to carry out my suggestion to disinfect and ship them from Hamburg.

The question of baggage is, in my opinion, a far more serious one than rags or any other, with which we have to deal, and the one least appreciated by the steamship companies.

The emigrant himself, after reaching the United States at the end of a ten, twelve, or fourteen days' journey, may be supposed to be free from disease, but we have absolutely no guaranty that his baggage may not subsequently infect both him and his neighbors.

I would here beg to call attention to the request in my letter of July 20, 1893, in which I suggested that the collectors of customs be requested to refuse entry to any baggage not bearing the consular or medical officer's stamp, showing it to be harmless in the opinion of said officer. I would state once more that such a ruling would do much, very much, toward giving us good control of baggage.

Under present conditions much so-called hand baggage goes aboard the steamers and is never seen by my inspector or myself.

Bathing the people and disinfecting body clothing is now not done at all except at the barracks, where it is fairly well done, as before stated.

Bath tubs are not considered a common necessity among the class of boarding houses taking emigrants, and the emigrant himself most often has a decided aversion to soap and water, and in many instances really has never had in his whole life but one full bath, viz, the day he was born.

Insist as one may, he can not have people bathed in houses devoid of tubs and when the people themselves have a decided repugnance to bathing.

Up to and including May, 1893, Hamburg was the favorite port of embarkation for Russians, Poles, and Galicians, the former people constituting at least half of the number leaving here for America.

These are the people for whom the present barracks were built, and these are the people who filled the steerage of the steamship *Normannia* on her unfortunate voyage in August, 1892.

While not desiring to discriminate against any particular people, candor compels the assertion that these are as dirty a people and altogether as undesirable from a sanitary standpoint as I have ever seen.

The better class of people, from Germany, Austria, and Denmark, in the main, are very well provided for in the boarding houses and hotels so long as no cholera exists in Hamburg, and are people who are not, in my opinion, very likely to carry the disease at all for exactly the same reasons that prevail with first cabin passengers.

The total number of emigrants passing inspection at my hands has been as follows:

During April, 6,975; May, 5,878; June, 5,040; July, 3,175; total, 21,069.

A very decided decrease will be noted during July and can easily be explained by the statement that the Hamburg senate had then begun to enforce their decree debarring all of the Russian Jews from entering Hamburg.

I append a statement compiled from the abstracts of bills of health for May, June, and July past.

I give none for April, because the data at my disposal are so imperfect as to render such a statement of no statistical value.

Transcript of abstract of bills of health during the months of May, June, and July.

MAY.

Destination of vessel.	Passenger steamers.	Freighters.	Steerage passengers.	Baggage inspected.	Baggage disinfected.
New York	12	3	5,238	443	109
Boston	2	1	410		
New Orleans		2			
Philadelphia		4			
Baltimore	1	1	230	41	7
Smaller ports		11			
Total	15	22	5,878	484	116

Transcript of abstract of bills of health during the months of May, June, and July—Continued.

JUNE.

Destination of vessel.	Passenger steamers.	Freighters.	Steerage passengers.	Baggage inspected.	Baggage disinfected.
New York	13	7	3,635	2,027	525
New Orleans		4			
Baltimore	1	2	302	130	54
Boston		1			
Philadelphia		2			
Canada	4		1,104	360	158
Smaller ports		6			
Total	18	22	5,041	2,517	737

JULY.

Destination of vessel.	Passenger steamers.	Freighters.	Steerage passengers.	Baggage inspected.	Baggage disinfected.
New York	13	5	2,146	1,999	233
Boston	2	1	66	16	2
Philadelphia	1	4	202	87	35
Baltimore	1	4	178	68	17
New Orleans		4			
Canada	5		583	134	35
Smaller ports		6			
Total	22	24	3,175	2,304	322

In view of the great difficulties attending the carrying out of a quarantine of five days where there are inadequate barracks accommodations or none at all I would suggest that steamship companies, one and all, might have their attention called to the fact that their business may be stopped outright at any moment, and so impelled to erect suitable barracks and give such control of the same to consuls or medical officers as may enable them to see that the laws are fully carried out.

Very respectfully submitted,

J. H. WHITE,
Passed Assistant Surgeon M. H. S.

REPORT OF PASSED ASSISTANT SURG. P. M. CARRINGTON, DETAILED FOR DUTY AT BREMEN, GERMANY, AND MARSEILLES, FRANCE.

U. S. MARINE-HOSPITAL SERVICE,
Bremen, Germany, August 10, 1893.

To the Surgeon-General U. S. Marine-Hospital Service,
Washington, D. C.:

SIR: In accordance with instructions contained in your circular letter of the 6th of July, 1893, I have the honor to submit the following report of the transactions of the service at the port of Bremen from May 25, 1893, to July 31, 1893. When I arrived in Bremen the new quarantine regulations had already been put in operation by the U. S. consul, Dr. H. M. Starkloff, and many of the difficulties of their execution had already been overcome. There had been a lack of facilities for efficient disinfection, but about the time of my arrival a steam disinfecting plant was completed by the North German Lloyd Steamship Company, and all baggage requiring it is now disinfected by steam. During the cholera epidemic of 1892 Dr.

Starkloff instituted an examination of emigrants and employed Drs. Peltzer and Hahn, who were paid by the Steamship Company, through the consul, to conduct the examinations. These gentlemen are still so employed, and with their assistance I examine the emigrants the day before sailing, each one being at the same time vaccinated by the ship's surgeons, two of whom are present for that purpose. At this examination a control card is issued to the emigrants, and Drs. Peltzer and Hahn stand at the entrance to the railroad station the following morning to see that only those having cards pass to the cars. This control card was formerly issued as an evidence of physical examination and vaccination. Having been superseded for this purpose by the United States inspection card, its use is continued as a control card, as stated, and the ship's surgeons are instructed to take it from the emigrant during the voyage. A special train, leaving the station at 6.30 a. m., takes the passengers to Bremerhaven, where I again inspect them and stamp their tickets as they pass through one of the baggage halls of the steamship company to the tender which conveys them to the steamship. The ship is inspected and the crew mustered before the emigrants are allowed to come on board, and the cabin passengers, who come on a later train, are inspected as they cross the gang plank.

It is important that steamers should reach Southampton and pass through the English Channel in daylight, and in order to accomplish this they must take advantage of the tide and cross the bar before the passengers have arrived; the journey from Bremerhaven to the steamship and return consumes considerable time, and so, practically, the whole day is spent in the expedition of one steamer; rarely steamers take their departure from the wharf at Bremerhaven. The sailing days are Tuesdays, Thursdays, and Saturdays, and on the other week days my time is fully occupied in the examination of emigrants and their baggage. The sanitary condition of the port is good, and the death rate for the period embraced in this report has been about equal to an annual death rate of 18 per 1,000 of population. Many deaths are caused by phthisis pulmonalis but notwithstanding the large number of emigrants who pass through Bremen but few cases of contagious and infectious diseases occur. The streets are the cleanest I have ever seen, and great care is taken to keep them in proper order. The water supply is derived from the river Weser, above the city, and is filtered before being distributed to consumers; it is clear and palatable, and is believed to be as wholesome a water as it is possible to obtain. The quantity is ample for all purposes. The water supply of Bremerhaven, which is supplied to all vessels, comes from natural springs in the country, and is good, pure water.

The emigrant boarding houses and hotels are under the control and supervision of the emigrant bureau of the police department and the police surgeons; cases of contagious diseases are transferred at once to the hospital, and the bedding, etc., sent to the public disinfection station, where they are disinfected by steam. I have observed the disinfection as done at this place, and it is efficient. There is now in process of construction a very complete bathing and disinfection plant, and when it is finished all emigrants from infected or suspected localities will be bathed and disinfected there. This will be required by the Bremen authorities as well as by the United States quarantine regulations. Bremen is lacking in one very essential particular, a good sewerage system, but steps are being taken now to supply this deficiency, and it is expected that the new system will be in operation within a year. At present the pail and cistern systems are in vogue. The pails are removed, under cover, and the cisterns emptied into covered receptacles at stated intervals, and the excreta so carried into the country and used as fertilizers. Only vessels carrying passengers clear from Bremen; all freighters clear from Bremerhaven and receive bills of health from the U. S. consular agent there, and I have had to deal only with the steamships of the North German Lloyd Steamship Company with a single exception, the chartered steamship *Red Sea*. The Lloyd steamers are single-screw iron vessels, well ventilated and lighted, and great care is taken to keep them in first-class condition. After each voyage they are thoroughly cleansed in every part and the steerage washed with creolin; new mattresses, cotton blankets, and tinware for the tables are supplied each voyage, the old articles being destroyed or given to the emigrant. The food supply of all vessels is inspected and certified as to its quality and quantity by a state commission, and I, in inspecting the ship, also inspect the food supply in the storerooms. The usual number of vessels sailing each week is three, and the sailing days Tuesday, Thursday, and Saturday; occasionally there are four, and rarely five sailings in one week. The directors of the steamship company have shown a disposition to cheerfully comply with the United States regulations and they have given a cordial support to all measures proposed. They are rather proud of their record of last year and anxious to duplicate it this year. In regard to the steamship *Red Sea* I wish to say that she was inspected by myself, and, as she had recently come from a suspected port, ordered to be disinfected; the disinfection was done under my personal supervision by bichloride of mercury—1 to 800. Additional ventilators were ordered, as well as the construction of water-closets and a hospital. Dr. Starkloff and I inspected her after the alterations were made, and together inspected the passengers, crew, ship, and food supply on the day of sailing.

The steerage passengers were as good as the average from Russia, and the ship was in first-class condition. All the baggage for this steamer was disinfected by steam in the most approved manner, and it was a source of satisfaction to us that in spite of the newspaper criticism she entered New York Harbor with no case of sickness on board. The detention for five days of emigrants from localities known to be, or suspected of being, cholera infected has been required; the steamship directors, realizing the value of this precaution, will not knowingly ship an emigrant from such localities until he has been so detained, and it is also a matter of self-interest on the part of the hotel-keeper to see that the people are detained, so it has been an easy matter to govern the detention. In order to have the emigrants bathed it was necessary to notify keepers of hotels that unless they provided facilities for bathing their passengers, such passengers would not be accepted; this notice was issued by Dr. Starkloff and myself, and the local emigration officials told the boarding-house keepers in my presence that no emigrants would be assigned to those houses which failed to comply with said notice ; the result has been that all the hotel-keepers have had bathrooms built, and the people now appear at the medical examination in a much more cleanly condition. With the assistance of the emigration officials disinfection of the body clothing of the emigrants is now made at the public disinfection station. The baggage of detained emigrants is disinfected at the Lloyd baggage room by steam ; the packages being opened, the articles hung up in the apparatus, and exposed to a temperature of 104° C. to 110° C. The baggage of certain cabin passengers has also been subjected to this disinfection. Owing to the long journey and the difficulty of bringing baggage, the Russians have, as a rule, very little baggage, and the large number of pieces shown in this report as having been disinfected is due to the fact that all the hand baggage is included. The emigrants shipped from this port come chiefly from Germany, Finland, Norway-Sweden, Denmark, Russia, and Austria-Hungaria. Those from Germany, Finland, and Norway-Sweden and Denmark I consider the best physically, as well as from a sanitary standpoint; the Russians and Hungarians seem to be the least desirable. The Russian Jewish emigrants are extremely orthodox, and will only eat the flesh of animals which have been killed in accordance with the rules of their religion; in consequence they eat little or no meat, and are, as a rule, badly nourished.

The Hungarians, on the other hand, eat anything offered them, and are in much better physical condition than the Russians.

Exact statistics of the nationality of emigrants are not obtainable, though I have made every effort. I estimate that during the past two months the proportions have been about as follows:

	Per cent.
Germans	40
Scandinavians	15
Austro-Hungarians (including Galicia)	20
Russians	15
All other nations, including a few Roumanians, Australians, and Americans who travel in the steerage	10

The total number of steerage passengers sailing from this port during the period May 25 to July 31, inclusive, was 27,475.

Merchandise shipped from this port consists largely of new goods from the interior of Germany, as toys, linen and cotton goods, rice, tobacco, cement, cheese, beer, wine, etc. Those articles of merchandise which require disinfection usually come with consular certificates of disinfection. Goods originating here and requiring disinfection are generally of the class which may be disinfected by steam, and the disinfection is done at the public disinfection station or at the Lloyd baggage hall, usually the former. Shipping permits are issued for all merchandise, and such as may require it are ordered to be disinfected before the permit is granted. The ship's manifest is examined before the steamer sails in order to see that only goods are shipped for which permits have been granted. No rags have been shipped from this port since I have been here.

Condensed abstract of bills of health.

Number of vessels inspected.	Crews.	Passengers.		Detained five days or longer.	Baggage.	
		Cabin.	Steerage.		In-spected.	Disin-fected.
May 4	443	278	3,703		216	115
June 17	2,511	828	14,074	4,021	4,685	9,897
July 14	2,359	1,052	9,698	1,747	6,396	6,045
Total	5,313	2,158	27,475	5,768	11,297	16,057

NOTE.—The records of detained persons and the baggage are not complete, owing to the fact that arrangements for keeping said records were not completed for some days after my arrival.

The shipment from noninfected ports of emigrants from infected localities would be rendered safer if all steamship companies were required to establish suitable barracks with complete arrangements for bathing and disinfection, where such emigrants could be completely isolated and kept under observation for the required time, under the control of consular or medical officers.

I think the various steamship companies would establish such barracks if they were notified that upon failure to do so in a certain time no emigrants from infected localities would be accepted as passengers on their steamships.

While this is being written I am informed that the Lloyd Steamship Company have issued an order to their agents and subagents to accept no more passengers from Galicia and those districts in South Russia where cholera prevails so extensively. They also inform me that they will take no persons suffering with favus except such as have prepaid tickets.

In closing it is only proper to say that I have received the cordial support and assistance of Dr. Starkloff in the performance of my duties; by combining our energies we have perhaps been able to accomplish more than would have been possible for either alone.

Very respectfully, your obedient servant,

P. M. CARRINGTON,
Passed Assistant Surgeon, Marine Hospital Service.

U. S. MARINE-HOSPITAL SERVICE,
Bremen, Germany, August 15, 1893.

To the Surgeon-General, U. S. Marine-Hospital Service, Washington, D. C.:

SIR: I have the honor to report as follows concerning my service at the port of Marseilles, France, from May 3 to May 20, 1893: My time was principally occupied in supervising the disinfection of rags and skins intended for shipment to the United States. The disinfection was by sulphur, 6 to 8 pounds to 1,000 cubic feet in an almost air-tight apartment; the exposure never less than twelve hours. The disinfection of rags was going on every day that I was in Marseilles, but none were shipped during my service there, although I disinfected a ship (Italian bark) preparatory to the reception of a cargo of rags the day before my departure. Several attempts to avoid the regulations relating to the disinfection of wools, by shipping via Liverpool, were discovered and reported to the medical officer at that port. Bills of health were issued to only a few vessels (4 or 5), and but one of these carried passengers. Forty-three steerage passengers were examined; one was rejected on account of favus and refused passage by the steamship company. Notice was given the various steamship companies just before I left Marseilles that vaccination of crews and passengers would be required before granting bills of health, and this was enforced on the only vessel sailing after said notice was issued and before I left. As the items from the bills of health which I issued will doubtless be included in the report of the officer now on duty at Marseilles, I have not attempted to include them in this report. The sanitary condition of the port during this period was perhaps as good as it ever is in Marseilles. A show is made of cleaning the town in the principal business portions, but in those portions where cleanliness would have been most desirable no attempt was made to remove the garbage and other filth, which in some sections was sickening. The sewers are open and foul odors of great variety greet the nostrils of pedestrians at every corner. The water supply I never considered above suspicion.

Mr. Trail, the American consul, gave me all the assistance in his power.

Very respectfully,

P. M. CARRINGTON,
Passed Assistant Surgeon, Marine-Hospital Service.

REPORT OF PASSED ASSISTANT SURG. L. L. WILLIAMS, DETAILED FOR DUTY AT LIVERPOOL, ENGLAND.

U. S. MARINE-HOSPITAL SERVICE,
Liverpool, England, August 12, 1893.

To the Surgeon-General, U. S. Marine-Hospital Service, Washington, D. C.:

SIR: In compliance with official order of July 6, 1893, I have the honor to submit the following report on the sanitary inspection of ships and passengers at this port for the period ending July 31, 1893:

I arrived in this city April 22, 1893, but did not assume charge of the inspection service for several days, contenting myself in the meantime with observing the method of inspection instituted by Consul Thomas H. Sherman and obtaining such information in regard to the shipping as I could procure. The method which

I found in force was adopted by me and carried out, with some modification, until the receipt of Department Circular No. 65.

The provisions of the ship were inspected several days before the date of sailing and while they were being placed on board. On the day of sailing I boarded the vessel, in company with the local port officials, and inspected the crew and second-cabin and steerage passengers, who were mustered on deck and caused to pass singly in review. The saloon passengers came on board several hours later. The manner of inspecting the latter was for some time a matter of contention, as the steamship companies were naturally fearful of offending a class of travelers from whom most of their profits are derived. It was finally agreed that they should be inspected as they passed on board from the tender, visitors being excluded from the latter.

On the receipt of Circular No. 65 it was posted in the consulate for the prescribed period, and its provisions enforced from and after May 28. From this date the inspections of steerage passengers have taken place on shore in the company's dock sheds. Blank cards for the emigrants and labels for their baggage are issued to the steamship companies. All the baggage belonging to the emigrants examined at any one time is stacked up in the inspection shed, forming a corral, in which the emigrants are placed. They are passed out singly through a gangway and examined. The place of last residence, as shown on the card, is noted, and, in the case of emigrants claiming residence in Great Britain but suspected of coming from the Continent, they are questioned, and when practicable their statements are verified. Very often it is impossible to verify these statements, and herein lies a source of fallacy, as erroneous statements as to residence may be prompted by irresponsible agents.

After the emigrant has been passed his ticket is stamped and returned to him. All suspicious cases are turned aside for further examination, which is made at the conclusion of the general inspection. When any persons are rejected or detained, their effects are removed from the mass of baggage and set apart for disinfection. The remainder is then stamped and turned over to the steamship company for shipment. No parcel of baggage is opened unless the sanitary history of the owner is unsatisfactory. All freight ships and their crews are also examined before bills of health are issued. Owing to the great extent of the water frontage of the port and the magnitude of the commercial operations with the United States, it early became apparent that a single inspector could not cope with the work. This fact was communicated to the Bureau, and on May 13 Sanitary Inspector C. W. Bailey reported for duty under orders from the Surgeon-General. A clerk was also employed to stamp tickets and baggage and superintend the disinfection of emigrants' effects.

It occasionally becomes necessary to employ an additional medical inspector when several vessels clear from the port at the same time. This is unavoidable, as the movements of the shipping depend on the tide. In compliance with instructions from the Bureau, Sanitary Inspector Bailey has during the past month been detailed to proceed once a week to Hull for the purpose of inspecting the Wilson Line ship which sails every Friday or Saturday from that port for the United States.

The sanitary condition of the city during the present year has been satisfactory. Enteric fever and the eruptive fevers of children exist as in other large cities, and a few cases of smallpox and typhus fever may almost always be found in some of the overcrowded slums. The latter diseases never assume epidemic proportions, and the cases as they arise are efficiently dealt with by the sanitary authorities. Each case, as soon as discovered, is removed to an isolation hospital and the infected premises emptied and thoroughly disinfected. The city is clean and well paved and possesses an excellent water supply. Owing to these conditions cholera, if introduced, is not likely to spread. Outgoing ships carrying passengers are inspected by the medical officers of the board of trade. This consists in an inspection of the food supply, the second-cabin and steerage passengers, and the ships' hospitals and steerage compartments. Vessels entering the harbor from infected or suspected ports are boarded by the port sanitary officer and the condition of passengers and crew ascertained. Masters of vessels are compelled by law to notify this officer of any suspicious case of sickness on board. In case of infectious disease on an incoming vessel the sick are removed and isolated and the ship disinfected. The disinfection consists in destruction of infected clothing and bedding, the pumping out and flushing of the bilges, and sulphur fumigation for six hours.

The following lines carry passengers to the United States direct:

The Cunard Line, one ship weekly to New York and one weekly to Boston; the White Star Line, one ship weekly to New York; the Guion Line, one ship every fortnight to New York; the American Line, one ship weekly to Philadelphia. When the emigrant season is at its height the Cunard Line puts on an extra weekly ship for New York. These ships are all in excellent condition. They are cleanly, well ventilated, and well provisioned. In addition to these lines there are three lines carrying passengers to Montreal and Quebec, the Allan, Dominion, and Beaver lines. Most of their steerage passengers find their way to the United States. The principal freight lines are the White Star, Warren, Leyland, Johnston, Allan, and Harrison lines. Most of these ships are engaged in the cattle trade. They are large, well-appointed steel vessels. In addition to these there is a considerable number of "tramp" steamers and sailing vessels engaged in the American trade.

Twelve ships on an average sail from this port weekly for the United States. During the autumn this average will probably be higher, owing to an increase in the number of freight ships.

Thus far but little difficulty has been experienced in enforcing the regulations, the managers of the several lines expressing a desire to comply with all the requirements of the law.

The steerage passengers embarking at Liverpool for the United States are, for the most part, emigrants from the British Isles, Norway and Sweden. Very few, comparatively, come from other places on the Continent. Of late, however, a considerable number of Russians and Poles have embarked at Liverpool, owing, no doubt, to the fact that many continental lines refuse to carry them. A few Germans and Austrians ship at Liverpool. Italians are occasionally met with; Frenchmen almost never. Foreign emigrants are housed until they embark in a large number of boarding houses scattered throughout the city. These are, for the most part, well kept.

The White Star and Cunard lines have excluded Russians and carry very few continental emigrants except Scandinavians. The Guion and American lines carry Russians and Poles to a limited extent.

With few exceptions the only classes of emigrants passing through this port requiring detention or disinfection of baggage are Swedes from Gothenburg, the latter place being infected with smallpox, and Russians. A large number of emigrants for Liverpool pass through Gothenburg and, as disinfection facilities here are limited, much trouble was experienced in dealing with their baggage. Finally, by arrangement with the steamship companies and the cooperation of Consul Shepherd at Gothenburg, the checked baggage of these emigrants is placed, as soon as they arrive, on a lighter moored alongside the steamer at Gothenburg, or is placed in an apartment and sealed up, a consular certificate setting forth these facts being obtained. This baggage is passed at Liverpool and the hand baggage only subjected to disinfection. These emigrants are all vaccinated by the ship's surgeon prior to their inspection.

The effects of emigrants from Russia and other suspected places on the Continent are invariably disinfected. The facilities for disinfection consist of two small steam-jacket chambers connected with the local fever hospitals. These appliances are barely adequate to meet present exigencies, and the steamship companies have been warned of the necessity for erecting an adequate disinfecting plant for their exclusive use. A large plant is being erected for the use of the city sanitary authorities, but I have been informed that this apparatus will not be available for the steamship companies. Thirty thousand three hundred and fifty-one emigrants in all have embarked at this port for the United States from April 22 to July 31. The merchandise shipped from Liverpool to the United States is of a character so varied that a description of it would embrace almost every article known to commerce. The chief articles of interest from a sanitary point of view are rags, wools, hair, and hides. All rags are disinfected by the sulphur process prior to shipment and wool, hair, etc., coming from suspected regions are similarly treated unless accompanied by a consular certificate stating that they have been disinfected or have been collected in a noninfected locality. No sanitary certificate from a local official is excepted unless explicitly guaranteed by a consular or medical officer of the United States. These products come chiefly from Russia, Turkey, Syria, Persia, Egypt, India, Austr alia, and the west coast of Africa. A very large quantity of wool is exported to the United States, and the question of its disinfection has been a difficult one. In many cases it is impossible to obtain a consular certificate, and the cost of unbaling and disinfection is so great that dealers either abstain from shipping it in such cases or attempt to pass it through other ports. They complain, whether justly or not I do not know, that the requirements at different ports are not the same.

A condensed statement of the transactions of the service for each month is inclosed.

Remarks and suggestions.—As the medical officers stationed at European ports have to perform a duty of a delicate and inquisitorial nature on foreign soil, every measure at the command of the Department should be utilized for strengthening their hands and increasing their authority. I would also recommend that, at ports where medical officers are stationed, the relative duties of medical and consular officers be more explicitly defined. The present methods of conducting inspections, though still imperfect in some respects, have required time and labor to bring them to their present state of efficiency, and if the inspections are discontinued during the winter the same ground will have to be gone over in the spring. I therefore suggest that the principal stations be made permanent.

Owing to differences of opinion, certain restrictions are said to be imposed at some ports and not at others, and there is lack of uniformity regarding the localities to be regarded as infected or suspected. I believe that this might be obviated by detailing an officer to reside at some central point in Europe, to have general supervision of foreign stations, to collect information, to decide as to the places which shall be regarded as infected or suspected, and to be available for emergency duty.

In so far as the matter can be reached by regulation or otherwise every effort should be made to induce steamship companies to erect emigrant barracks and plants for disinfection in order that the regulations may be carried out with thoroughness. As an additional safeguard no immigrant should be permitted to land unless provided with an inspection card, and all baggage not labeled and stamped should be held for disinfection at the port of entry.

I do not believe that the present regulations relating to merchandise can be efficiently carried out without competent medical supervision at all important shipping points and unless exporters are compelled by law to produce at the consulate at the port of final shipment all invoices or bills of lading of transshipped goods. Such papers are not now produced, and by collusion between shippers and steamship companies the regulations may be successfully evaded. This might also be effectually prevented if collectors of customs were empowered to refuse entry to all goods regarded by regulations as liable to convey disease unless such goods are certified by a consular or medical officer to be free from infection. As the preponderance of scientific opinion seems opposed to the belief that ordinary merchandise can convey the cholera germ long distances, and experience in past epidemics affords no evidence that it has ever done so, I believe that the list of suspected articles might be curtailed with advantage to commerce and without detriment to the public health. I would suggest, therefore, that so far as cholera-infected regions are concerned the articles of merchandise to be disinfected or debarred shipment be confined to rags, food stuffs, and baggage sent as freight. The time and attention of the inspecting officer could then be devoted with greater advantage to the more threatening source of danger—the emigrant and his personal effects.

In concluding my report I desire to refer to the thorough and efficient work done by Sanitary Inspector C. W. Bailey and to express my appreciation of the many courtesies shown me by the consul, Hon. James E. Neal, and his deputies.

Very respectfully,

L. L. WILLIAMS,
Passed Assistant Surgeon, M. H. S.

Abstract of bills of health issued at Liverpool during the months of April, May, June, and July, 1893.

Month.	No. of vessels inspected.	Destination.	No. of crew.	No. inspected.		No. detained under observation.	No. days detained.	No. pieces baggage inspected.	No. pieces baggage disinfected.	Nature of cargo—general or specific.	Cargo disinfected in whole or in part. Specify.	Sanitary condition of port.	Any facts of importance regarding the vessel (whether disinfected), passengers, crew, baggage, and the cargo.
				First and second cabin.	Steerage.								
April 22-30	12	....	1,850	1,614	3,856	....	7	......	....	General	(*)	Satisfactory.	
May	46	....	5,600	4,559	12,449	38	7	2,186	43		(*)		
June	49	....	5,412	3,779	8,256	....	..	11,623	701		(*)		
July	53	....	5,096	3,494	5,790	7	7	6,800	802		(*)		

* Part of cargo disinfected from time to time according to regulations.

REPORT OF PASSED ASSISTANT SURG. W. J. PETTUS, DETAILED FOR DUTY AT SOUTHAMPTON, ENGLAND.

U. S. CONSULATE, U. S. MARINE-HOSPITAL SERVICE,
PORT OF SOUTHAMPTON, ENGLAND, SURGEON'S OFFICE,
July 10, 1893.

To the Surgeon-General, U. S. Marine-Hospital Service, Washington, D. C.:

SIR: I have the honor to submit the following report of the water supply of Southampton. The source of supply is from two wells, each 100 feet deep, sunk into the chalk strata which underlies all this part of England. From these wells it is pumped into reservoirs (covered) near by, whence it is conveyed to the city in iron mains. The wells are 8 miles distant from Southampton. By this system the minimum danger of pollution is secured.

The Hamburg-American, North German Lloyd, and American Line steamers all take supplies of this water from the city mains. The water as it comes from the wells contains 16° of hardness from chalk held in solution; by passage through Atkens filters and treatment with slaked lime this hardness is reduced to 4°. I inclose herewith analysis of water by Prof. Wanklyn before it is softened.

Very respectfully,

W. J. PETTUS,
Passed Assistant Surgeon, M. H. S.

REPORT OF TRANSACTIONS UNDER THE "NATIONAL QUARANTINE LAW" AT SOUTHAMPTON, ENGLAND.

SOUTHAMPTON, ENGLAND, *July 31, 1893.*

To the Surgeon-General, U. S. Marine-Hospital Service, Washington, D. C.:

SIR: I have the honor to submit the following report of transactions at this station since my arrival here on the 29th of March last. I found that the consul had posted a copy of the national quarantine laws of February 15, 1893, in the consulate ten days previously, so it was announced that the laws would be enforced at this port on and after the 1st day of April, 1893. There are four passenger steamers per week leaving this port for the United States. Two of these belong to the North German Lloyd Line, sailing from Bremen to New York, coming into Southampton water and anchoring at a distance of 5 miles from the town. Passengers and their effects are conveyed aboard by tenders. The Hamburg-American Line has one vessel per week from Hamburg to New York, it anchoring down the harbor and embarking passengers from tenders. Neither of these lines carries emigrants from this port except on rare occasions, only embarking first and second cabin passengers. These are inspected as they pass down the gangway on the tender, being brought here by trains that convey them to the docks, alongside the tender. Abundant opportunities for further inspection of passengers are afforded during the ride to the steamer, requiring half an hour. After looking over the bill of health from port of departure and ascertaining whether there has been any sickness or death on the voyage, the bill of health for this port is given. The American Line has four vessels per month carrying passengers to New York, sailing direct from this port.

At present a vessel leaves here for New York every Saturday at noon. All passengers are brought from London by special trains to the dock where the ship lies. The train bringing the emigrants arrives a few minutes before they are embarked. On the afternoon before the day of sailing the list of emigrants required by immigration laws and regulations of March 11, 1893, is submitted to me for approval. On this list is stated the last place of residence and birthplace of emigrant. This list is of great assistance to the system of inspection here, as the period of inspection is very short. I deem it of the greatest importance to know where the passenger has lived or has been during the few weeks immediately before embarkation, as the visual inspection of emigrants for the purpose of preventing the importation of cholera to our country, even under the most favorable circumstances, must be very unsatisfactory, except in one respect, and that is that after some practice one soon learns to detect nationality at a glance, and, knowing just where cholera or any other infectious or contagious disease is epidemic, it is possible to prevent the embarkation of people from infected or suspicious countries. The physiognomy of a Russian or Russian Jew is unmistakable after one has studied the faces of a few. Russians frequently claim to be Germans, and nearly all of them say they have lived in England for at least two months. When their circumstances and the treatment they are subjected to are considered, it is not surprising that they deny their nationality and claim residence in a town they have merely passed through en route to the port of departure. Visual inspection prevents this class of deceit. All emigrants' baggage is inspected first and labeled; then the emigrants themselves are passed up a narrow gangway one at a time, when they are carefully inspected, all of suspicious nationality being put aside for further investigation. Those passing are given an inspection card and are allowed to embark. This system is the best that could be devised, as there are no barracks here for the housing and care of those proposing to sail to the United States. Plans for such barracks have recently been submitted to me providing accommodation for 300 emigrants, with 350 cubic feet of air space per head, and ventilating shafts calculated to supply 2,000 cubic feet of fresh air for each occupant per hour. Sufficient bath and water-closet facilities are provided for in the plans. It is contemplated that these barracks will be completed early in 1894. The steamship companies are not building them; it is to be done by outside parties. At present the emigrants are cared for at the Emigrants' Home, Blackwall, London, while awaiting embarkation. This is a well-managed institution on the banks of the Thames, with a capacity of about 500 beds. By agreement with the superintendent the effects of all Continental emigrants, including the clothes they wear, are disinfected by sulphur fumigation: then each person has a bath and puts on the disinfected clothes. All coming from infected localities are detained at least five days and have all their clothes boiled for at least half an hour. All this work done at Blackwall is under the supervision of Dr. S. D. Willard, sanitary inspector Marine-Hospital Service. Those from infected localities who do not have certificates from Dr. Willard undergo the five days' detention under my observation, and their effects are disinfected by steam in the plant belonging to the board of health of Southampton. The steamship companies have no disinfecting plant here. It has been my custom to notify the steamship agents from time to time what localities are considered infected, so as to give them a chance to refuse to book any emigrants from such places. The American Line have been very careful in this respect and have in this way lessened the work to some extent. Instructions are sent to the subagents in different countries that emigrants from certain localities will not be accepted as passengers; hence such people are prevented in many cases from reaching this port. I will here quote one of the above-mentioned letters in full.

"SOUTHAMPTON, *April 27, 1893.*

"Messrs. RICHARDSON, SPENCE & Co.,
"*Managing Agents American Line, Southampton.*

GENTLEMEN: According to instructions I have to inform you that emigrants from or near the following-named places can not be allowed to embark for the United States from this port without a certificate of disinfection from a U. S. consul or medical officer of the United States, viz, Hamburg; France in or near Lorient, Quimper, Marseilles; Russia, and Galicia. Unless a disinfecting plant and barracks are built here this disinfection will have to be done in London.

"Very respectfully,

"W. J. PETTUS,
"*Passed Assistant Surgeon M. H. S.*"

The class of emigrants sailing from this port is very good, mostly Scandinavians, with some English, Irish, Scotch, and Swiss. Besides the Swiss but few from the Continent come here. I consider the Scandinavians to be a desirable class of emigrants, and but few of them have to be rejected. They still persist in bringing feather beds with them, in spite of warnings that they can not be carried to America. All emigrants embarking here get small straw mattresses, which are sold on the wharf for 37 cents each. These are thrown away or destroyed before they land on the other side. The health of those who have come here to embark has been exceptionally good and no case of contagious or infectious disease has developed among them while awaiting embarkation. Before vessels sail the manifest of cargo is submitted to me, and care is taken that no articles liable to convey infection are carried.

Since the 1st of April of this year 3,897 first cabin, 3,195 second cabin, and 5,819 steerage passengers have been inspected at this port, making a total of 12,911 embarking from this port for the United States.

The sanitary condition of Southampton has been very satisfactory, though there are from time to time a few cases of smallpox reported. The local health officer is an efficient and zealous man and has been very kind in affording information. He inspects all passengers from infected or suspicious localities, but there is no detention unless actual sickness exists. The addresses of all passengers are taken before they land here. Cases of infectious or contagious diseases are cared for in a special isolation hospital or on board the hospital ship, which is anchored out in the harbor at a safe distance from other vessels. The city has a good hospital for isolation of infectious diseases, with an excellent steam disinfecting plant attached. Vessels from infected localities with cases of yellow fever or cholera aboard are sent to a station near Ryde, a distance of 18 miles from Southampton, where the sick are placed on a special hospital ship provided for that purpose and the vessel disinfected. Dr. Wellesley Harris, M. R. C. S., D. P. H., medical officer of health for this port, is thoroughly competent and vigorously carries out the sanitary regulations of the city.

In letter of July 10 a short description of the water supply of Southampton was given. The daily supply of water is 30 gallons per head. "The source of supply is from two wells, each 100 feet deep, sunk into the chalk strata which underlies all this part of England. From these wells it is pumped into covered reservoirs near by, from whence it is conveyed to the city in iron mains. The wells are 8 miles distant from Southampton. By this system a minimum danger of pollution is secured. The Hamburg-American, North German Lloyd, and American Line steamers all take supplies of this water from the city mains. The water as it comes from the wells contains 16° of hardness from chalk held in solution; by passage through Atkens filters and treatment with slacked lime this hardness is reduced to 4°."

From April 1 to August 1 sixty-five bills of health were issued, or a little more than sixteen per month. I have made a careful investigation of the sewage disposal methods of this city, and in my opinion they are most excellent and thorough. The liquid sewage is collected into reservoirs, where, by treatment with ferrozone, the sludge is precipitated. "Ferrozone is mixed with just enough clean water to make the whole in a stiff paste, which is let into a box through a shoot with perforated sides placed in the sewer. The sewage flowing past washes the ferrozone gradually out of the box, and is thoroughly mixed with it by the time it discharges into the reservoir at a manhole 150 feet distant from the box. A small stream of water falling upon the ferrozone prevents it from consolidating." The sludge settles to the bottom, leaving the water above very clear. This water is forced out into the harbor by an automatic ejector. The emptying of the clarified water from the reservoir puts into action a compressed air ejector, which forces the sludge through an iron pipe to the sewage destructor, a distance of about half a mile, where it is collected and finds a ready sale to agriculturists at 50 cents per load. The collections from ash and garbage barrels are burned in specially constructed furnaces without the use of any other fuel. The street sweepings are mixed with the sludge before it is sold as manure. Everything resulting from the burning of the refuse is utilized. The ashes and clinkers falling from the furnaces are sold. The clinkers are used in making roadways and paving slabs, and the ashes for making mortar. The heat from the destructor produces the power for running all engines used in works, together with electric-light plant and storage of compressed air for operating the ejectors. So economically is this system managed that after paying all expenses each year they have a balance of $1,000 from sale of sludge, slabs, mortar, etc. There are no appreciable odors to be noticed in the vicinity of the works. The cost of the entire plant was about $35,000.

My work here is not so satisfactory as it would be were there barracks provided here for the detention of emigrants pending their embarkation, together with a steam disinfecting plant. I would respectfully recommend that all steamship companies carrying emigrants to the United States be required to provide suitable barracks, with disinfecting plant, at their port of departure. Should any companies refuse to provide these barracks and steam disinfecting plant they should be notified that no emigrants could be landed in the United States from their port after the first appearance of cholera in any European country next summer. Collectors of customs, health officers, and immigration officers should be instructed to absolutely refuse entrance in any United States port to any steerage passenger who has not in every way complied with the strict letter of the law of February 15, 1893, and succeeding circular relating to it. We must have such substantial support as is provided for in the above recommendation to enable us to carry out the letter and spirit of the regulations.

Very respectfully,

W. J. PETTUS,
Passed Assistant Surgeon M. H. S.

REPORT OF PASSED ASSISTANT SURG. R. M. WOODWARD, DETAILED FOR DUTY AT ROTTERDAM, HOLLAND.

U. S. TREASURY DEPARTMENT, MARINE-HOSPITAL SERVICE,
Rotterdam, Netherlands, July 31, 1893.

To the Surgeon-General U. S. Marine-Hospital Service, Washington, D. C.:

SIR: In accordance with official instructions I arrived at the port of Rotterdam, Netherlands, March 30, 1893. The United States quarantine regulations not having been posted the ten days required by law, my official duties did not begin until April 2, 1893.

In the year 1892, when cholera prevailed so widely in Europe, the first case appeared in the Netherlands during the week beginning August 28, and the first duly certified case in the city of Rotterdam September 7. This latter was preceded by five suspected cases reported as "cholera nostras;" the first of the latter cases occurred on the 26th of August. The last case of cholera occurred in Rotterdam on November 19, 1892, and the last case in the Netherlands during the week beginning December 11, 1892.

During the above period thirty-three cases of cholera Asiatica were treated in the city, with a mortality of 66⅔ per cent. Twelve cases of "cholera nostras" were treated, with a mortality of 50 per cent. The disease was almost exclusively confined to dock laborers and people living on small truck boats, who, in the face of warnings from the board of health, persisted in dipping water from the river at the docks, many times near the mouth of a sewer, and drinking the same.

At the time of this outbreak Mr. Walter E. Gardner, U. S. consul at the port of Rotterdam, established a system of inspection of emigrants and disinfection of ships. Two local physicians were employed to make the medical examinations, and a licensed chemist disinfected all vessels leaving this port for the United States. This was still in vogue at the time of my arrival. Mr. Gardner deserves great credit for the interest he took in the matter, and undoubtedly good resulted from his efforts. The two physicians continued to assist me, emigration being then very heavy. Disinfection of freight vessels was discontinued by instructions from the Department, but disinfection of passenger steamers was pursued until June, 1893, at which time it was also stopped.

Surg. W. A. Wheeler visited my station in the month of June and passed a week inspecting the methods here. At that time the contract between the U. S. consul and the two local physicians terminated, and I have since conducted the examinations unassisted. Just after the above-mentioned time I established a system of daily inspection instead of examining the emigrants on the day of embarkation, and it is only from this date that I can give complete statistics of the number rejected and detained.

The important duty for which we were detailed was to examine emigrants and to see that healthy people and noninfected baggage only went to America. This

I set about at once, and soon perfected a satisfactory plan. No one not actually on the ground can appreciate the difficulties we have encountered in enforcing these regulations. The tide and the peculiar methods of loading and discharging cargo, together with the laws and regulations of this Government, present many obstacles.

There is but one regular passenger line out of Rotterdam, the Netherlands-American Steam Navigation Company, making semiweekly sailings to New York, with an occasional stop at Baltimore. The larger ships stop at Boulogne sur Mer for passengers. Two ships, the *Schiedam* and *Zaandam*, sail from Amsterdam, carrying only steerage passengers.

The following is a list of the Netherlands-American ships:

Name of vessel.	Gross tonnage.	Net tonnage.	Number in crew.	Passenger capacity.		
				First class.	Second class.	Steerage.
Spaarndam	4,539	3,244	104	95	92	909
Maasdam	3,984	2,786	108	130	54	805
Werkendam	3,639	2,668	77	90	80	772
Zaandam	3,062	2,282	38			1,068
Schiedam	2,745	2,085	49			696
Glidam	2,751	1,773	52	62	8	456
Glubbeldam	2,751	1,773	58	62	8	456
Veendam	4,036	2,780	104	130	54	819
Amsterdam	3,629	2,601	85	88	72	808
Rotterdam	3,329	2,361	84	62	70	648
Obdam	3,657	2,657	81	90	80	804
Edam	3,130	2,267	50		64	871
P. Caland	2,584	1,867	50		61	674

The Netherlands-American Company was organized in 1872. The first emigrants were carried to the United States the following year, numbering 3,024. Each year has witnessed an increase in this traffic until, in the year 1892, it amounted to 35,853. I give below a list of the numbers and nationalities of the emigrants embarked at Rotterdam and Amsterdam during the months of April, May, June, and July, 1893, all of whom I examined; also a list of those embarked at Boulogne sur Mer, none of whom I saw:

Emigrants embarked at Rotterdam and Amsterdam.

Months.	Austro-Hungary, including Galicia.	Russia, including Poland.	Netherlands.	Belgium.	Italy.	France.	Germany.	British Isles.	Other countries.	Total.
April	2,189	719	990	7	383	102	544	59	289	5,282
May	1,095	1,299	1,347	22	717	81	672	74	278	5,585
June	1,504	1,985	341	8	109	28	406	18	250	4,649
July	1,166	374	466	4			129		457	2,596

Emigrants embarked at Boulogne sur Mer, France.

Months.	Austro-Hungary, including Galicia.	Russia, including Poland.	Netherlands.	Belgium.	Italy.	France.	Germany.	British Isles.	Armenia and Eastern countries.	All other countries.	Total.
April	186	45		3	466	93	8	7	80	156	1,044
May	123	20			226	19	9		236	188	821
June	26	68		15	89	16	6	4	28	177	429
July	5	73		2	23	4	6	1		24	138

Emigrants coming to Rotterdam are met at all trains by interpreters dressed in the company's uniform, and are conducted to the company's hotel. Very few emigrants for this line stop in private boarding houses. This emigrant hotel has been pronounced the finest in Europe. It is built of brick, four stories and a basement, and was opened February 8, 1893. It is not cheaply constructed, but finished in hard wood, tiling, mosaic floors, etc., and is altogether an elegant building. The kitchens and storerooms are in the basement. The floor above is occupied by the dining room, lunch room, and offices. The three floors above this are divided into several large rooms, each being partitioned into compartments for berths, three in a tier, the total capacity being 879 berths. Ventilators are placed in the wall near the ceiling. Fire escapes are provided and fire extinguishers found throughout the building. The water-closets are at the half-floor landings of the stairways. All water for drinking purposes goes through Pasteur filters. Emigrants are given good board and lodging here at a very moderate rate.

Emigrants upon arrival are not placed in the hotel at once, but in an observation building across the street from it, and are not allowed to mingle with those in the hotel. This observation shed is fitted with water-closets and wash rooms and contains berths for 216. At 9 o'clock each morning I personally examine all who have arrived the day before. Each one is given the following card:

Date of arrival	Date of sailing	
You are requested to treat bearer as follows:	Antiseptic bath	....
	Hair cut	....
	Shampoo and combing	....
	Disinfection of clothing	....
	Rejected	....
	O K	....

Before my arrival every man, woman, and child is given an antiseptic bath (hot water, soft soap, and creolin). All the men and boys have their hair cut close with clippers and the head shampooed with a mixture of soft soap, carbolic acid, creolin, and petroleum, the shampooing being done with a stiff hairbrush. All the women and girls get the same shampoo without the hair cut, and comb their hair with a fine-tooth comb, one of which is attached to each bath apartment by means of a small brass chain. As soon as the new disinfection chamber is built, which is under consideration, each one's clothes will be disinfected while the wearer is in the bath. At present only the few which I so order are disinfected in an efficient but inconvenient apparatus.

The foregoing preliminaries complete, the emigrants come to me one at a time. Everyone opens the clothing over the upper portion of the chest; all the females come with the hair hanging loose down their backs, so that no case of favus can be concealed. I look at the chest, tongue, and throat, eyes, scalp, and hands, besides a general inspection. If an emigrant is found to be clean and in good health he is given the foregoing card, punched in the space opposite "O K." Upon this card my clerk then stamps the date of arrival and the date of sailing, the latter being for the first ship out if the applicant is from a noninfected locality, and for the next succeeding ship if from a cholera-infected country. He then places my official stamp across the face of the card to prevent any substitution. Each emigrant bearing my card punched "O K" and properly stamped is transferred at once to the emigrant hotel across the street, where he is sold his passage ticket and given the regular "inspection card," filled out entire except my stamp, he still retaining the "O K" card.

If at my examination the applicant is found to have omitted the bath, hair cut, or shampoo, or these have been unsatisfactorily accomplished, he is given my card, punched opposite the required measures, and is immediately sent to the bath house, which is within the same inclosure as the observation building. Should he get through with what is ordered for him I examine him again the same day; if not he stays in the observation shed until the following day, when, if all right, his old card is destroyed and an "O K" card substituted. Women are often sent back time after time on account of the vermin in the hair, and if I find that they will not comb them out their hair is cut also.

If an applicant is afflicted with anything calling for rejection his card is punched "Rejected" and he is put aside. Those I reject are seen by a physician employed by the company: if, in his opinion, they will recover rapidly under treatment he orders the treatment; if not the company at once sends the emigrants back to their homes (at the expense, I am told, of the agents who forwarded them). Those who are taken under treatment by the company's physician pass me again when he pronounces them recovered. If I consider them well they go; if not they are returned to him, and they can not embark until they have my "O K" card, properly filled out.

By the above detailed method the emigrants do not lose their passage money and are in no danger of losing their baggage by having it stored away in the hold.

As each one enters the room where my examination is made his papers are examined. If from an infected country he is placed in a certain inclosure. All these people are examined together when the others have passed, so as to avoid confusion in stamping the "date of sailing." This last date shows the ticket agent in the hotel what ship to sell tickets for and facilitates his work.

At the final inspection at embarkation each one presents me this "O K" card, bearing my stamp and the proper date of sailing. This is then destroyed and his inspection card stamped, whereupon he goes aboard the ship. If his card does not bear the proper date or is otherwise incorrect it is detected at a glance and the person stopped.

As before stated, the month of July is the only one for which I have complete statistics of the number detained under observation and the number rejected. In July I examined 3,014 applicants for steerage passage. Of these, I detained 461, or about 15 per cent, for a period of five days. Out of the total number I rejected 183, or about 6 per cent. Rejecting one member of a family is usually equivalent to rejecting the entire family; including the families of the rejected, therefore, 418, or about 13 per cent, were turned back. The 183 rejected included 154 favus, 12 scabies, 7 purulent conjunctivitis, 3 fever, 2 idiocy, 1 measles, 1 chicken pox, and 3 doubtful.

I have asked the company to post a notice in the hotel, printed in several languages, to the effect that no food will be allowed to pass with the emigrants on board the vessels. The notice will be prepared at once, and I will then throw out all material of this kind found in the baggage or carried about the persons of the emigrants. Nearly every valise or bag contains a lot of this food, which is not only dirty but a source of danger. The emigrant hotel is surrounded daily by a number of peddlers, who buttonhole the ignorant emigrants and tell them they will be starved on the ship and that their only salvation lies in taking a good supply of eatables with them. The peddlers then dispose of their stock at exorbitant prices and the poor people squander the little money they have, which would come into good play when they reach the other side.

All of the company's dock employés drink tea instead of water, tanks of this beverage being kept constantly on tap; and a notice is posted stating that any employé found drinking river water will be discharged. This was instituted during the cholera season last year. I suggested that similar tanks of tea be placed in the hotel for the gratuitous use of emigrants, and the suggestion has been adopted.

The disinfection chamber for baggage is built in one end of the dock shed and is about 25 feet long by 13 feet broad and 8 feet high. Across the ceiling gas pipes are arranged about 8 inches apart, and on these are attached a series of hooks for clothing. The steam enters by a 2½-inch pipe at one end near the floor. A large double door opens into the chamber, in one side of which is a small window, through which the thermometer is read. The chamber has a capacity for about 200 ordinary packages of emigrant clothes.

All baggage from those countries that I consider infected is unpacked, each article well shaken out, and the entire bundle suspended on a hook. The steam is then turned on, the doors being closed and barred. My clerk watches the thermometer, and when 103° C. is reached he times it for thirty minutes. This temperature is reached in from twenty to thirty minutes, and the thermometer frequently registers 110° C. before the time is up. The doors are then opened and the baggage repacked, my clerk counting the packages and issuing labels for the same. I believe that disinfection by this method of suspension is better than can possibly be accomplished by spreading the clothes on horizontal racks, for, however well the outside pieces may be disinfected, the steam can not permeate to the center of a bundle as it does when it is loosely suspended by one end. All leather goods and other articles which can not be steamed are dipped in a 2 per cent solution of carbolic acid.

All emigrant baggage from noninfected localities is inspected. The baggage master secures the keys of all trunks and valises and has them arranged in rows, open for inspection, at 5 p. m. on the day before the sailing of each ship. All dirty baggage is ordered into the disinfecting chamber. All feather beds are stopped and notices have been sent out telling the people not to bring them. When I began this about forty-five beds were stopped from the first ship. Now only about half a dozen are found each time.

The inspection of the ship and crew takes place at 4.30 p. m. on the day before sailing. On this day a board of Netherlands commissioners visits all passenger steamers and inspects the steerage, food, lifeboats, etc. At embarkation the Netherlands Emigration Commission places a man at the docks to count the number sailing.

Following are the various lines of freight vessels sailing from this port:

Neptune Steam Navigation Company, of Sunderland, England.

Name of vessel.	Tonnage.		Number of crew.
	Gross.	Net.	
Calitro	2,969	1,920	26
Chicago	2,381	1,538	26
Delano	2,968	1,920	27
Ohio	2,389	1,568	26
Patapsco	2,933	1,894	26
Urbino	2,412	1,572	26
Venango	2,938	1,910	26

Local agents, Hudig & Blokhuyzen.
Destination, Baltimore.
Frequency of sailing, once a week.

North American Transport Line.

Name of vessel.	Tonnage.		Number of crew.
	Gross.	Net.	
Loch Lomond	2,571	1,689	28
Loch Maree	2,698	1,728	31
Loch Etire	2,011	1,397	30
Carlisle	2,141	1,397	25
Winchester	2,198	1,431	30

Local agents, Ruys & Co.
Destination, New York.
Frequency of sailing, fortnightly.

North Atlantic Trident Line.

Name of vessel.	Tonnage.		Number of crew.
	Gross.	Net.	
Bidor	2,876	1,891	34
Enskar	3,093	1,998	36
Tonar	3,014	1,976	32

Local agents, Ruys & Co.
Destination, Philadelphia.
Frequency of sailing, monthly.

German-American Petroleum Company of Bremen.

Name of vessel.	Tonnage.		Number of crew.
	Gross.	Net.	
Minister Maybach	2,881	2,132	33
Willkommen	2,834	2,335	34
Gut Heil	2,555	1,997	35
Energie	2,910	1,908	35
Standard	2,765	2,008	35
Geestemünde	2,750	2,032	35
Brilliant	3,402	2,336	35
Heligoland	2,558	1,783	34
Burgermeister Petersen	2,940	2,048	33
Diamant	3,583	2,440	38
Mannheim	3,583	2,441	38
Hafis	2,116	1,587	33
Paula	2,835	2,362	33
Elise Marie	3,194	2,586	33

Local agents, Wambersie & Son.
Destination, New York, Philadelphia, and Baltimore.
Freqnency of sailing, weekly.
These vessels also sail to Hamburg, Geestemünde, Stettin, and Danzig, each ship receiving sailing orders after loading.

American Petroleum Company.

Name of vessel.	Tonnage.		Number of crew.
	Gross.	Net.	
American	3,897	2,927	37
Bremerhaven	3,255	2,578	36
Charlois	2,744	2,115	33
Ocean	2,325	1,872	34
Chester	2,530	1,867	33

Local agents, Wambersie & Son.
Destination, New York, Philadelphia, and Baltimore.
Frequency of sailing, fortnightly.

The above lines frequently charter an extra vessel for one trip or a series of trips. In addition to the regular lines, the firms of Hudig & Peters, William H. Muller & Co., Schencker & Co., Kufper von Glam & Smer, Verbeet & van Swyndregt, and van der Slik & Co., send out an occasional ship to the United States.

One firm only, Cohen & Co., is now shipping rags from Rotterdam to the United States, and but few rags have been shipped since my arrival. This firm has recently built two new disinfecting chambers of brick, each one 40 feet long by 16 feet wide and 12 feet high, with accommodations for 30 bales of rags. Swinging iron arms are fastened to the side walls. When these are brought to the center, galvanized wire screening is spread over them, and upon this the rags are scattered from 4 to 6 inches deep. A large sulphur stove is placed inside, in which are burned 3 pounds to every 1,000 cubic feet of space, and the fumigation is continued for six hours. This is superintended by the consul's clerk, under my direction. Hides, wool, hair, and other articles requiring disinfection are either treated in this rag house or in the disinfecting chamber of the passenger steamship company; occasionally in a closed iron lighter or box car.

DIFFICULTIES IN THE WAY OF CARRYING OUT THE REGULATIONS.

1. *Mustering the crew.*—All ships coming to Rotterdam are, with few exceptions, unloaded and reloaded by stevedores, the crew having nothing whatever to do with this work. Consequently, as soon as the vessel reaches the docks and her lines are made fast the entire crew leave, and that is the last seen of them until the hour of sailing again. One line discharges the crew each trip and employs new men. There is no law in the Netherlands to compel a sailor to come aboard ship one minute before she sails; therefore it is very difficult to get them together for inspection.

2. *Inspecting the freight manifest.*—The freight manifest is usually the last thing completed before the sailing of the ship. In the wharves will be stored, we will say, 500 barrels, 400 boxes, and 200 bales of goods. They load so as to fit these goods in very tight and prevent damage from the rolling of the ship. On a ship sailing to-day they may load of the above 450 barrels, 225 boxes, and 100 bales. No one can tell just how many of each will be placed aboard until the loading is complete, the remainder going by the next ship. Then a great deal of loading is done from lighters towed down from the Rhine. One of these may arrive within an hour or two of sailing, draw up alongside, and hoist her cargo aboard, whereas if she had arrived an hour later the next ship of the line would have received her freight. It is maintained by the agents that a great many bills of lading, from which the freight manifest is compiled, arrive in the last mails, and I know from personal observation that where a ship sails after midnight it is customary for the clerks in the freight agent's office to be busy on the manifest away into the night. To tell by personal observation just what is stored away in the hold of a ship is an absolute impossibility which needs no demonstration.

3. *Action of local customs officers.*—Customs officers of the Netherlands Government are constantly aboard a vessel while loading, and if she takes on any wine or spirits, of which large quantities are shipped from here, they close and seal with twine and wax each hatch as soon as it is loaded. These seals can not be broken until the vessel is 30 miles from port. The storeroom where the meats are placed generally contains some bottles of wine for the use of the ship's officers, and this room is consequently sealed by the customs officers, preventing the inspection of the meat. The proper customs officials who have authority to break these seals on request are seldom aboard at the time of inspection, but have left on watch a man without any right to molest them. The captain is as powerless as anyone. Actually, on one vessel I inspected, they had, by mistake, locked up in the storeroom some cooking utensils that were badly needed, and there was no way to get at them. This will illustrate what I have already mentioned as to the impracticability of ascertaining by personal observation whether the ship carries any cargo dangerous to public health.

4. *The water-closets.*—On freight vessels it is customary for the stevedores to use the water-closets on deck forward. They are not provided with a flush as are those in the cabin, and in the course of a day become very filthy. The outlet from them opens directly through the side of the vessel. A lighter always lays alongside, and usually there is one on either side; and to flush the closets out washes the mass into the lighter. To avoid the necessity of this, I have diligently pushed the suggestion of having the closets cleaned and locked when the ship comes into port, compelling the stevedores to go ashore, where accommodations are provided for them on the docks. Where a vessel lays in mid stream this is impracticable,

and I have then insisted on locking all but one closet, and trying to choose one located where it may be washed out at least once a day.

5. *Ashes and slops.*—All steam vessels necessarily use their boilers while discharging cargo and reloading, and ashes accumulate in large quantities. The law prohibits throwing anything of this kind into the river, and it has been customary to pile them on the forward deck until the ship reaches the English Channel, when they are thrown overboard and the decks washed. Ashes are hygienically clean, but one kind of dirt is conducive to another, and the cook gets in the habit of throwing his slops on the same pile, so that it is anything but inviting. After great effort I have succeeded in getting the agents to order a garbage boat alongside to remove this mass on the day set for my inspection.

6. *Boarding the vessels.*—The freight ships, as a rule, expect the medical officer to come aboard by any kind of an approach that is the handiest. Usually a single plank, about 15 inches wide, is placed from the side of a ship to the dock, or to a trestle. It is generally inclined at a great angle, and has become very slippery from dragging freight over it. There are no cross strips nailed to it and no guard to hold by. It moves up and down at each step. Sometimes one extremity of the plank is suspended at the end of a rope let down over the side of a vessel, causing it to tip with each step, momentarily threatening to throw the officer into the river. If he is fortunate enough to reach the side of the vessel over this last-mentioned affair he must grasp a swinging rope ladder and climb aboard. Sometimes the planks are wet from rain and covered with pieces of coal, while the coal carriers are elbowing the officer in passing and repassing with their burdens. Vessels lying in the stream expect him to climb over a lighter or two, then ascend by a small ladder placed against the side of the ship, or by a rope ladder suspended from above.

I have had more trouble in this than in any other one item, and have had such narrow escapes, at one time falling from a lighter into a boat, that I now absolutely refuse to go aboard unless a guarded plank or a companion way is furnished, and the ships are complying with my demand.

When vessels do not conform to the regulations the only alternative that the medical officer has is withholding the bill of health. Let me detail what this means at a port like Rotterdam. All large vessels go out at high tide. The second tide is not as high as the first, and if large vessels are detained from going on the higher tide they must wait twenty-four hours at great expense. Some of the ships draw 23 or more feet of water. When a strong wind is blowing offshore it makes an appreciable difference in the depth of the water in the artificial channels through which vessels approach or leave the city. It is not an infrequent occurrence for a vessel to be detained three days by reason of this wind, so that withholding the bill of health one day may mean an actual detention of several days.

Many freight vessels take a cargo under contract to deliver it at the port of destination within a specified number of days from the time of loading, or forfeit a large per cent of the profits of the trip; and twenty-four hours' delay means a great deal to such a ship. If the burden of this detention fell upon those causing the difficulty it would be morally just and proper to enforce it, but such is not the case. The fault usually lies with the agents, or arises from the peculiar nature of the laws in force, while the financial loss, etc., has to be borne by the masters and the owners.

RECOMMENDATIONS.

1. *Permanency of inspection system.*—There can be no doubt of the good resulting from the present system of inspection, and I therefore earnestly recommend that it be made permanent.

It is not alone cholera we are trying to keep out, but smallpox, favus, and many other diseases equally repulsive.

All, or nearly all, European steamship companies are making some effort to conform to the United States regulations, thus insuring a better class of emigrants.

2. *All emigrant companies to provide barracks, etc.*—All steamship companies carrying emigrants should be compelled to build suitable barracks where emigrants can be collected together for observation, bathing, and thorough examination. No medical exmaination can be complete where the emigrants are first seen as they file aboard ship, dirty and uncombed. Those companies refusing to furnish such facilities should be denied entry at United States ports.

3. *Cooperation of officers in America.*—It is very necessary that, in order to make our work effectual, there should be perfect cooperation on the home side. It does little good for us to refuse a clean bill of health to a ship, or a proper certificate for certain cargo, and then have the ship or cargo received in America without a question. No emigrant should be allowed to enter who is unprovided with our "inspection card," properly filled out, and his baggage properly labelled.

R. M. WOODWARD,
Passed Assistant Surgeon, M. H. S.

REPORT OF PASSED ASSISTANT SURGEON G. B. YOUNG, DETAILED FOR DUTY AT NAPLES, ITALY.

U. S. CONSULATE, NAPLES, ITALY,
September 15, 1893.

To the Surgeon-General U. S. Marine-Hospital Service, Washington, D. C.:

SIR: In compliance with the letter of the Department, dated July 6, 1893, directing me to submit a report of the operations of the service at this port for the period between the date of my arrival, April 6, 1893, and July 31, 1893, I have the honor to transmit the following:

Emigration from this port having been suspended on August 8, and, an account of the operations to that date being essential to a complete record, I have ventured to extend the scope of the report to include said date.

In order that a clear understanding of the conditions governing emigration from this port may be had it is necessary to devote some space to a consideration of Italian emigration in general.

A glance at the map shows Italy naturally divided into three distinct divisions. The Island of Sicily on the extreme south, the main body of the peninsula or "boot," and the section containing the northern provinces, which stretch along the base of the Alps, and, while distinct geographically from the main peninsula, are still shut off from the rest of Europe by lofty mountain ranges.

These geographical divisions determine the routes taken by Italian emigrants, and give to emigration from Italian ports the peculiarity of being practically purely Italian, since the natural barriers of sea and mountain direct all passengers of other nationalities to the ports of northern Europe.

In conformity with these natural divisions, the Italian Government has designated three ports at which emigrants may embark, viz, Genoa, Naples, and Palermo.

It is true that there is a small movement of emigrants via Havre, but this cuts a very small figure in the total, and is confined to those coming from the extreme northern districts.

The territory tributary to Genoa embraces the northern provinces and possibly the upper fourth of the peninsula.

The movement therefrom to the United States amounted in 1892 to 6,225 "adult places," or about 6,850 "souls." I specify the United States because it is to be borne in mind that the Italian emigration to South America outnumbers that to the United States about 3 to 1.

Inasmuch as the total number of Italian emigrants landing in the United States during the calendar year of 1892 was about 75,500 (the exact figures not being at hand), it will be seen at once that the vast majority of the passengers embark at the southern ports. About 2,500, in round numbers, go from Palermo direct; all the balance from Naples.

The great bulk of these passengers are from the provinces in the extreme south and from Sicily, but include some thousand from the middle provinces.

In consequence of its geographical position, practically all the emigrants going via Naples can reach their port of embarkation after, at the furthest, twelve hours by rail from the time of leaving their homes, and in most cases a much briefer journey.

This fact cuts an important, figure in the conditions hitherto existing at this port, and in the methods employed in handling the passengers, and will be referred to later.

The movement of passengers from Naples follows a regular curve. Beginning about November, it ascends gradually until about the last of January, when it rapidly rises to its highest point about March 15 to April 15; then declines first slowly and then rapidly until September and October, when it is at its lowest.

During the fiscal year ending June 30, 1893, there were embarked at Naples for New York about 53,000 souls. I say "about," because up to the time of my coming the companies kept no record of "souls," only estimating by "places;" two children, between 1 and 8, being taken as one "place" and children under 1 not being counted at all. Of these 53,000 about 32,000 went during March, April, and May. As sailings were entirely suspended for twelve days in April, this gives the astonishing average of 400 a day for nearly three months.

At the time of my arrival (April 6) there was a lull in the rush. This was due to the fact that the companies were afraid to advertise sailings lest by so doing they might get into trouble with the new law, and thought it best to wait until my arrival, the probable date of which they seemed to know in advance.

I found the method of handling passengers to be as follows:

The business is divided amongst five companies, viz: Anchor Line, English; Navigazione Generale Italiana, commonly known as the Florio Rubbatino; Compagnie Fabre, French; Compagnie Nationale de Navigation, French; and the Nord Deutcher Lloyd.

The four first-named companies compose what is known as the "pool," having a contract with each other as to prices, commissions, and division of profits (but being none the less ready on that account to appropriate each other's passengers).

None of these lines have regular sailing days, and the number of vessels employed varies with the time of the year and the business offering. In last September and October the pool only dispatched two vessels, while in March this year they had twelve, and the Lloyds two more, or one every other day. Altogether there are about ninety sailings a year.

The two French lines, having their headquarters at Marseilles, usually embark considerable cargo there, and then come direct to Naples for passengers and cargo, being forbidden by law from touching at more than one Italian port.

For the sake of comparison, I take up the consideration of the ships of each line in detail, it being understood that in the description of the fittings I am speaking of the condition of things as I found them on beginning my work, and that in estimating ventilation I considered it as it would be during bad weather, when hatches and other accessory means of ventilation were not available. It is of interest to note in passing that I have been vehemently assured by the masters of certain ships and their agents that, owing to circumstances which they seemed unable to fully explain, the sea never broke over their decks, and that from year's end to year's end the hatches were never closed. Inasmuch, however, as one of these captains pointed out as a ventilating shaft what a few strokes of a chisel and hammer proved to be a pump well, and some of the others displayed equally astonishing ignorance of the internal arrangements of their own ships, I took the liberty of doubting their statements.

COMPAGNIE FABRE.

This company has five vessels more or less constantly employed, and from June, 1892, to June, 1893, had twenty-one sailings and carried some 14,000 passengers.

The berths are located on two decks, upper deck of iron and the lower one of wood without ports. The uprights supporting the bunks are of iron and capable of being taken down and put up very expeditiously.

The bedding consists of a very coarse bedtick filled with a kind of grass; the pillow of the same, and one blanket. The contents of the bedticks and pillows are thrown overboard, and the ticks are sent back to Marseilles to be refilled. The berths are arranged at the sides and also in the center of the compartment. The aisles between the tiers of bunks are narrow. Access to some of the compartments is by companion ways, as required by law, and to others by stairs down ordinary hatches. The steerages are lighted by lanterns fastened against the wall, and giving rather dim light.

The air space is generally sufficient to satisfy the law, but in some compartments there are too many bunks.

The ventilation is sufficient on the main deck, if the hatches could be kept open all the time, but it is generally deficient on the lower deck, the ventilation being too small and being badly placed.

The hospitals in all but one ship are situated on the main deck, just aft of compartments containing boilers and engines. They are of sufficient size, but badly ventilated and reached by narrow, crooked, and dangerous stairways, the equipment consisting simply of bedding similar to that provided in the steerage, with no commodes or similar facilities, and latrines a long way off.

The dispensaries are on the spar deck, just at hospital stairs. They are very well arranged and exceedingly well stocked with medical and surgical appliances.

The latrines are forward on the spar deck, and are in permanent iron walled houses with cement floors. They are of excellent pattern, but the supply of running water is not sufficient in some.

The lavatories are very good. They are situated on the spar deck, and are in permanent deck houses, but no provision is made for washing clothes and only one room is provided for both sexes.

The galleys are of good size and have excellent fittings. The meals are usually served on deck, as there are very few, if any, tables and benches below; so that when the weather is too bad for the people to be on deck they must have their meals in the steerages seated on their bunks. There are excellent facilities for washing the tins on all the ships.

The stores are excellent and abundant as they must be under the French law.

The water is supplied from small tanks on deck furnished with mouthpieces from which the water is obtained by suction, but there is no provision in the steerage for supplying water for women and children during the night, or in bad weather, except on one ship.

THE COMPAGNIE NATIONALE DE NAVIGATION.

Employs four vessels. During the "pool year" ending June 15 they carried about 10,500 passengers in eleven sailings.

The ships were all originally fitted up as transports during the Franco-Tonquinese war, and retain nearly all of their fittings. They have no cabin accommodations.

The main deck is of iron and the lower deck of wood without ports. Two of the vessels are all one compartment on the main deck from the forecastle bulkhead to the stern. The other two have more space cut off forward, but are practically open the rest of the way aft. The lower decks, or more properly the upper holds, are separated by bulkheads into four compartments. On the upper deck the bunks are the adjustable iron ones, and on the lower deck they are wooden and only temporary.

Bedding, arrangement of bunks, lighting, air space, ventilation, dispensaries, galleys, stores, and water supply are all about the same as on Fabre Line.

The lavatories are of good pattern, but have very poor water supply.

The hospitals are very roomy and well situated, in after turtle back in two steamers and forward on the main deck on the others; they have bath tubs, and on two steamers closets, but no other fittings except bunks.

NAVIGAZIONE GENERALE ITALIANA.

This line, having a fleet of 106 vessels to select from, being, I believe, the largest ocean-going fleet in the world, employs a variable number of ships in carrying emigrants to America. The last "pool year" they employed 9 ships, which made 14 sailings and carried 10,800 passengers. The ships vary so widely in character as to make a systematic comparison with the French lines impossible. They frequently go to New York and then to South America or elsewhere before returning to Naples, and their suitability for carrying passengers is much impaired thereby. Some of the ships are good and some are very bad.

In the arrangement of bunks, the bedding, air space, latrines, dispensaries, stores, lighting, and water supply are all about the same as on the French ships. The ventilation is usually very deficient.

The hospitals are not so good as the French National, but are about the same as on the Fabre ships in character and fittings, but almost universally in bad order.

Some ships have lavatories, but most of the ships are without them. They all have cabin accommodations, but seldom cabin passengers.

THE ANCHOR LINE.

This line had 28 sailings the last "pool year," with 13 ships, and carried about 17,500 passengers. The ships of this line are of a great variety of sizes and patterns. Some of them are liners of a generation ago, with all their old cabin fittings removed; others are simply large freighters. A few of them have some cabin accommodations, but practically all are simply freighters fitted up to carry emigrants. They make no regular trips, but usually start from Glasgow, visit some Spanish and Mediterranean ports, go up the Adriatic to Trieste, and return to Naples for their passengers.

The arrangements are quite different from the other lines in many respects. The bunks are all built of wood, and are destroyed at the end of each voyage. They are not usually so crowded as on the other ships, and access to the steerages is by regular or temporary companions, but they are lighted in the same way—by wall lanterns.

The air space is much better than on the lines previously mentioned, which is due to a greater pitch of the decks.

Most of these ships were ventilated for the cattle trade, and consequently their ventilation is much better than on any other line doing business from Naples.

The steerages all have adjustable tables and the bedding is, as on the other lines, very rough but usable.

The hospitals are always temporary, merely a corner cut off from the steerage on the main deck. They have no fittings except bunks, but have sheets, which is not the case on any of the other ships.

The latrines are always temporary constructions, and are apt to be badly designed and built. There is absolutely no provision for personal cleanliness.

The galleys are partly temporary and have very crude fittings.

The dispensaries are entirely absent and they have instead a by no means large or well supplied medicine chest.

The stores are partly from Naples and partly from England and in general seem neither so good nor so abundant as on the other lines.

The water is supplied on deck, as on the other ships, but it is the only line I found having provision for supplying water at night in the women and children's steerage, doing this by means of small syphon tanks about 18 inches high and 14 inches square, fixed in wooden frames. This is perhaps the best form of tanks for the steerage, as it prevents waste and slopping.

THE NORTH GERMAN LLOYD COMPANY.

This company only employs two steamers from this port, except in the winter season, when they make a few extra trips with one of their large ships. They have only recently engaged in the passenger business at this port, but since January 1, 1893, they have carried 6,800 passengers in eight sailings. These ships make regular trips back and forth and are never approximately on a schedule. They are regularly fitted up for steerage passengers.

The steerages are reached by companion stairways, have an abundance of large ports, and are lighted by incandescent lights—an immense gain.

The bunk frames are of iron, and the bedding of rather better quality than the other lines.

The air space is about as in the other ships, but the ventilation is a little scant.

The latrines are excellent and are situated on the main deck just forward of stairways, so as to be accessible in all kinds of weather. The washing facilities are represented by two pumps in rooms adjoining closets.

The hospitals are aft, near the cabin, and are readily accessible from the sugeon's room, dispensary, and steerage without going on deck. They are really large staterooms, with basins, etc.

The galleys and stores are excellent and the water is supplied on deck from butts with faucets, also readily accessible below.

Although thousands of female passengers are carried only the German ships have stewardesses.

The question of ship's surgeons demands some attention, On the Italian and two French lines the surgeons usually only ship for a voyage or two, many making only one voyage. Some of them are unmistakably bright, capable men, but a good many of them are anything but impressive. The Anchor Line carries regular ship's surgeons, who are no doubt very capable men, but it is the exception to find one who speaks Italian, so they have to rely upon the steerage interpreter, who is always ignorant and frequently a brute. The Lloyd's vessels carry their regular ship's surgeons, who speak a number of languages.

No mere series of notes like those just given can convey any adequate idea of the multitude of details to be considered in estimating the character of a vessel as to fitness for carrying steerage passengers. The neglect of matters of detail in the fitting out of many of these vessels was astounding.

When the length of the voyage is considered (from sixteen to nineteen days) it is certainly remarkable that the people arrive as well as they do, and speaks volumes for the endurance of the Italian peasant.

The food is generally good and abundant, judged by emigrant standards, and the water excellent. The fact that the people live on deck is responsible for their good condition. In bad weather, however, when compelled to remain in the crowded, badly ventilated, and often dirty steerages, eating their meals in their bunks for the most part, with closets perhaps inaccessible except by traversing the whole length of the deck, and on many ships without any provision for washing themselves or their linen, the condition must have been bad indeed.

Many of these conditions I have been able to ameliorate, but the existing passenger act is too vague and incomplete to render great improvement possible. It is but just to say, however, that in many ways the conditions were better than I expected to find them.

The merchandise shipped from Naples consists largely of food products, oil, wine, fruits, fresh and dried vegetables, maccaroni, and cheese. These articles are clean, well-packed, and give no trouble unless cholera should prevail.

None of them originate in Naples, and very few of them are packed here. Contrary to the general idea there have been no rags shipped from Naples for several years.

All but the German ships usually come partially loaded, so that an examination of the holds is impossible.

The passengers do not usually purchase their tickets direct from the companies, but through licensed emigrant agents, whose subagents in the provinces solicit business and make the preliminary arrangements. When a ship is to sail the passengers are either sent or brought to the city in small parties by the subagents and delivered to the agents. These agents are, in some cases, directly connected with the companies, but in most cases are not, and as far as they can will deliver the passengers to the company offering the best terms.

The people usually arrive the day before the ship is to sail, get their tickets, and have their passports viséed the same day, and go on board early in the forenoon of the sailing day; some, however, go on board the night before.

While stopping in town the people are quartered in a large number of boarding houses. These are of all qualities, some are very good and some are very bad, but the average is better than would have been expected. These boarding houses are licensed by the city and are under police supervision.

Their sanitary arrangements are apt to be very crude, but they are much better than the cheap immigrant and sailor boarding houses in New York.

The majority of the houses are near the railway station, and some distance from the place of embarkation.

Coming direct from their homes in the country, after at most twelve hours' journey, except in the case of the Sicilians, who first have a few hours by rail and then twelve hours by sea, the people arrive in good order. The Italian emigrant is very primitive in his habits, but the popular impression that in his native country he is personally as dirty as many of the emigrants from other European countries is a great mistake. They are a strong, healthy, and usually comfortably clothed race. The healthy, vigorous children are especially noticeable.

My presence here caused the companies to send word to all subagents to have the people clean for inspection, but after making allowance for this I must admit that I was most agreeably surprised at the average of their appearance.

One who only sees these people after they have been herded together for seventeen days on shipboard, or after having established themselves in the slums of our great cities, can form no idea of them as they appear fresh from the country. Hardly 1 per cent of the passengers embarking at Naples are from the city itself, and not more than 10 per cent from towns of any size.

Their baggage also was a pleasant surprise. Leaving out the food, which certainly gave great trouble, the general average of the people had good, clean clothing in their valises and trunks; of course there were lots of old working clothes, but that was natural, and such articles do not make bad baggage.

In a great majority of cases there was a sufficient supply of good, clean linen, underclothes, and socks. Some of them, however, had very little baggage, if any, and I remember one man whose luggage consisted of a handkerchief full of lemons and a green umbrella.

The ships lay at anchor about a quarter of a mile or more from the quay, and the passengers were put on board by means of rowboats, from one to eight in a boat. For conducting the emigrant to the landing and putting him on board it was customary to charge him 1 lire if he had only small baggage, and 1½ lire if he had a trunk. This was a prerogative of the broker's clerk, who, in turn, paid 25 centimes a head to the boatman for taking the passenger out to the ship. Here again was a "vested interest" strongly opposed to any change in the existing methods.

On the day of sailing the ship was visited by a commission, consisting of a deputy captain of the port, commissary of police, and the health officer, or one of his deputies.

The commission was accompanied by armed guards, who first mustered all the passengers on deck, and then made a careful search for stowaways. When all was in readiness the passengers were driven aft or forward, and then made to pass, one at a time, past the commission. This arrangement was most reprehensible. I have seen 1,400 men, women, children, and babies herded on the crowded forward deck of a ship, in the full glare of a southern sun, and kept there for seven or eight hours, usually without food or water, the women compelled to sit upon the dirty deck, and children and babies crying for food and water, without attracting any attention from anyone. Those who were passed had to wait on deck, aft, until all were through; so that if the closets happened to be forward, the people were cut off from access to them. I have more than once seen a mother vainly trying to hush her children who cried for water, and sometimes women were seen to suck water from the siphon water tanks and spit it into cups for their children. On these and other similar occasions I have quietly pressed a couple of sailors into service and superintended the distribution of water without interfering with the labors of the commission.

Each passenger had to pass in turn the inspection of the port surgeon and ship's surgeon, and up to the time I began vaccinating inquiry was made as to previous vaccination. Sometimes those unvaccinated were vaccinated, but usually after the first few score or so had passed the rest were left for the ship's surgeon to vaccinate at sea.

The medical examination varied very much in value, according to the officer present and the number to be examined. As it was the exception for the commission to begin work before noon, it can readily be seen that a very thorough examination could not be made of from 800 to 1,400 people in the short afternoon of a spring day.

Taken altogether this examination was never more than cursory and toward the last of the day the people often went by almost too fast to count.

No attention was paid to the recent whereabouts of passengers, or to the character of their baggage.

After my examination was established the work of the commission became still more superficial, and I remember having seen the medical officer sound asleep in in his chair for an hour while the procession moved by—an evidence of faith in the efficiency of my examination that I greatly appreciated.

After passing the doctor the passenger presented his passport to the police officer. Here the scrutiny was rapid but thorough. The officer had at hand a list of all the persons whose passports had been viséed for that ship, and a bundle of telegrams and papers, with descriptions of persons wanted. These embraced absconding debtors, criminals with uncompleted sentences, men of military age not legally exempt from service, etc. These were arrested, but no attention was paid to those known to be criminals, but against whom no charges were then pending.

The port surgeon or his deputies also visit each emigrant vessel upon its arrival and make an inspection, to see if she conforms to the terms of the law. They also inspect the food supply, samples of all stores being artistically arranged for inspection on a neatly spread table.

It will be seen that the station law duplicates our own in many respects. I am sorry to say, however, that its execution is hardly up to the high standard contemplated.

The fact that it was possible to secure official sanction for carrying passengers on a ship in which the between-deck compartments were without any ventilators, or in which the closets were not provided with running water, absolutely no provision made for washing, or hospitals habitually used as miscellaneous storerooms, tells its own story.

The city of Naples has a population, in the limits proper, of about 635,000, but the populous suburbs which are contiguous with the city and indistinguishable from it swells the total to about 700,000.

It is curious how strong a hold the idea that Naples is an exceedingly dirty and unhygienic city has upon the minds of all Americans.

Any newspaper man will write "glibly" of "Neopolitan slums" and "swarming lazzarone," and no amount of argument or presentation of facts makes any impression upon the predjudice.

As a matter of fact, Naples is very much cleaner than any large American city with which I am acquainted, and the slums, as a whole, do not begin to be as bad as those of several of our cities.

There is in Naples an immense poor population and those people live in a very primitive fashion and in utter disregard of the laws of hygiene. But there is very little of the squalor and wretchedness that are so common in our own slums.

The principal streets are better kept than most of principal streets in New York.

It is true that the death rate of Naples, from 32 to 39 in 1,000, is a high one, but a study of the mortality report shows that this is not due to the so-called "filth diseases," but to a large infant mortality among the poor and to diseases of the digestive tract attributable to bad and insufficient alimentation. From 30 to 45 per cent of the deaths are of children under the age of 5. From the middle of January to the middle of August, seven months, there were 12 deaths from scarlatina, 14 from smallpox, and 67 from diphtheria. There was an outbreak of measles in the spring and also one of typhoid fever, so that the figures for these diseases, 92 and 103, respectively, are much higher than normal.

Up to the great cholera epidemic of 1884 Naples undoubtedly deserved her evil reputation. Since then the improvement in the hygienic condition has been almost unparalleled.

The first great improvement was the introduction of the Serino water. This water is derived from what is practically an underground lake, situated among the mountains, at a very considerable elevation, and some 50 miles from Naples. It is piped to the city and stored in a reservior on a hill commanding the entire city. It is as clear as crystal, sparkling, and just hard enough to be palatable. I have never seen any water supplied to a city or town that compared with it in quality. The supply is practically unlimited. In all the poor quarters there are hydrants every 25 or 30 yards that run continuously. The water from these is delightfully cold, and as sparkling as from a mountain spring.

Within a year after the introduction of water the death rate from diarrheal diseases fell about 90 per cent.

The next step was the wholesale demolition of the worst slums, and the substitution therefor of broad streets and handsome buildings.

The sewer system has been almost completely reconstructed and when it is finished will be one of the best in the world. All sewerage will be delivered into the sea at a point some 5 or 6 miles from the city.

The sanitary organization is as follows: The city is divided into districts with a sanitary officer in charge of each. These have assistants whose business it is to keep track of all sanitary matters and report on them to the district officer. The district officer reports to the chief sanitary officer of the city, and he in turn to the chief sanitary officer of the Province.

The penalties for failure to report contagious and infectious diseases are very heavy, and can even amount to the revocation of the offending physician's license.

Vaccination is compulsory and free. Every child must be vaccinated before reaching the age of 1 year, and before its second year must be again brought for inspection of the scar.

Though the system is faulty in many details, it seems efficient on the whole.

The medical control of the port is not in the hands of the city, but of the port officials. Every vessel is boarded at the entrance to the port. I have never been present at these examinations, but, from the time consumed, they must be very superficial.

Vessels having the ordinary contagious or infectious diseases aboard are sent to the quarantine station on the island of Niseta, about 10 miles by sea. There the sick are disembarked, and the vessels seldom, if ever, detained. If cholera has occurred on board the vessel is sent to Asinara, an island on the Sardinian coast, where the Government has a large quarantine station. During the months of June and July, when cholera was very prevalent in Marseilles, there was approximately no restriction placed upon the landing of either persons or their effects.

There were biweekly and other steamers arriving from Marseilles during those months, but as far as I know there were no precautions taken except the disinfection of the dunnage of the crews.

The methods of handling emigrants here at the time of my arrival have been already described. The improving of them in any direction has been a work of considerable difficulty, but I am glad to say that nearly all the objectionable features have been removed or are on the way to removal. Not only had the natural indisposition of the companies to inaugurate improvements that necessitated expense to be overcome, but the situation was further complicated by the fact that there were five companies to deal with, and united action was often impossible to obtain. Another disturbing factor was the influence of the brokers and subagents. This could be relied upon at all times to do what it could to obstruct reforms. But above all other obstructions was that of the *vis inertia* of long-established custom, the strength of which can hardly be appreciated by one unfamiliar with Neapolitan business methods. It had always been the custom to embark the people by small boats. To venture to change would be revolutionary.

In order to show the force of custom here I take brief space to recount the experience of the city a few years since with the men who peddled water for horses.

The authorities decided the peddling was a nuisance and constructed, all over the city, suitable iron drinking fountains, where water was to be had free. But holes mysteriously appeared in the basins, or the pipes were stopped, or something else occurred to render the fountains useless. This went on for some time, until the city gave in, made the water sellers a present of the expensive fountains, and permitted them to keep a representative at each to exact the customary fee. So that in Naples, where perhaps the finest water in the world runs freely everywhere, a premium is put on cruelty to animals by the levying of tribute on their thirst. In a city where such conditions prevail it goes without saying that reforms in business methods are always difficult.

Immediately after my arrival I called a meeting of the agents, and went over the law and regulations, section by section. In this meeting and in forming the estimate of the work before me I was greatly assisted by Dr. Walter Kempster, who was then in Naples on a tour of investigation of European ports for the Department.

On looking over the field and conferring with Dr. Kempster, I reached the following general conclusions:

1. That no satisfactory medical examination could be made aboard ship.

2. That it was useless to attempt to change everything at once, and that a proper examination of passengers and baggage being assured, the first thing to be taken up in improving the sanitary condition of the ships was the securing of general cleanliness, sufficient air space, and adequate ventilation, the rest to come later.

3. That I needed competent assistants.

4. That my position was a very peculiar one as concerned the Italian authorities and my real official status rather indefinite, and that this latter fact was an advantage rather than not. Not having a status relieved me of the necessity of keeping within prescribed limits and left me free to adjust myself according to the necessities of the case. I therefore decided it best to first get the work under way and then call upon the authorities, my assumption being that they would probably wait to see what I was going to do before interfering; and if matters were under way the chance of their taking any action was much less than if I first called and explained my mission.

The first and third points I brought up in the first meeting.

When I announced the medical examination would have to be made on shore, I was met by an united chorus of assurance that it was absolutely impossible. The authorities, the impracticability of securing a place for the examination, the impossibility of controlling the people, etc., were alleged against the plan. I held my ground, however, and in less than three minutes the gentlemen present had arranged to comply with the requirement. I have since been told that the possibility of such a requirement being made had been discussed by some of the agents before the meeting, and the place to be used, if the demand was insisted on, decided upon.

In regard to assistants, I explained that if I did the work of examining the passengers and baggage alone it would necessarily be very, very slow, and that if the companies were willing I would nominate men as inspectors, their compensation to be arranged between themselves and the companies. The corps as first arranged consisted of Mr. R. O'Neil Wickersham, whose familiarity with localities and customs, gained in some twenty years' residence in Italy, as well as his knowledge of dialects and languages, made him invaluable, and Mr. P. S. Twells. To these was afterwards added Mr. Rutherford Twells, and I am sure no one could ask for more singleness of purpose in devotion to duty and untiring industry than was shown by these gentlemen in the discharge of their disagreeable and arduous duties. Dr. Cerio was appointed assistant medical inspector the latter part of May, and to him and the other gentlemen previously mentioned is largely due any success achieved in handling the emigrants at this port.

Work began on April 10. Between that date and August 1, a period of one hundred and twelve days, there were carefully examined 28,151 steerage passengers. As sailings were suspended during a week of this time, and no examination made on Sundays, this gives an average of 317 a day. The examination was done rapidly, but carefully, and included an examination of each individual's passports, as a control of his previous whereabouts, the stamping of his passport and inspection card, verification of the identity of the individuals when any cause of doubt existed, and a comparison of the number and age of the persons as described in the steamship tickets with the same data as given in the passports.

In all 11,297 were carefully vaccinated. There were 32,579 pieces of baggage thoroughly searched, many hundreds of pieces of dirty bedding and many hundred pounds of food being found and rejected. There were 1,217 pieces of baggage disinfected. In all about 150 persons were rejected, a very marked testimony to the uniformly excellent physical condition of the Italian peasant in his native country.

The data of rejection for the first two months was unfortunately lost, so I can only approximately give the causes of rejections. They were almost entirely for favus, a few for phthisis, and a few for syphilis.

For the transportation of these passengers 40 vessels were carefully examined, and in nearly every case altered more or less extensively to comply with the law.

It remains now to be seen how the work was done.

It has been four months of a continued and never-ending struggle against all sorts of obstacles, and while the resulting improvement in methods is quickly summed up I hope the foundation is now laid for really great advances. It is to be remembered that practically everybody, from the agents down, with some honorable exceptions, was in league to prevent any reforms, and that with 500 people a day to handle there was not much time for anything else.

The entire water front is a reservation under the control of the General Government, and is not a part of Naples at all. The city authority ends at from 50 to 100 yards from the water. All land within this belt can only be used after securing an official grant. There are a few sheds for storing purposes thereon, but the only building available for the examination of the emigrants was a small brick structure situated about 25 yards from the point where the emigrants embark. This building was used as a storehouse for baggage by some parties holding a "concession." It was about 40 by 20 feet and divided into three rooms, with large double doors on front of each, and doors of communication in the partitions. Only two rooms could be procured at first, and they were arranged as shown in accompanying diagram. The people passed in as shown, and the admissions were so regulated that each one in turn walked slowly forward from the point *x* to the inspector at *a*.

At the same time an attendant took his passport at (*c*) and handed to the clerk at (*b*), who stamped it with the service seal. Those who seemed to need looking after were put inside in the detention room for a more careful examination. The examination of the passports gave a reliable check as to the passenger's recent whereabouts, for the Italian peasant is not much given to wandering, and it was moreover the only check we had against impersonation. By stamping the passports and then seeing that no unstamped ones were presented to the Italian commission, we had a fair check against substitutes, but by no means an absolute one. When the inspection cards were introduced it gave another, but still not absolute, check. The best check was the vaccination.

After the introduction of the inspection cards I continued the examination and stamping of the passports as a means of ascertaining recent whereabouts, assisting the control, and for the following reason in addition.

The passenger act takes no account of children under 1 year in estimating air space and counts children "from 1 to 8" as half places, so the companies charge accordingly. It therefore frequently happens a child is presented as under 1 or 8, respectively, when his age is considerably more. The number of children under 1 who walk in by themselves and can boast full sets of teeth is astonishing. On the steamship tickets the number of full and half places is given, and by comparing this with the passports, I have sometimes found as many as 25 more places in a ship load than the tickets called for—a very considerable item when it is considered that all the ships, when full, are just about up to the legal limit of crowding.

When the examinations were first begun it was very much like trying to handle a herd of stampeded cattle; even the presence of police officers failed to keep the crowd about the building in order. Little by little, however, the attendants became accustomed to handling the people, and, after infinite trouble, the examination came to be conducted noiselessly and expeditiously.

DIAGRAM.

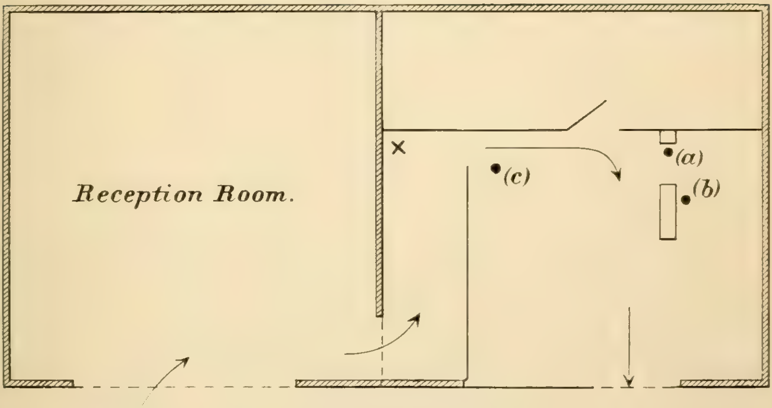
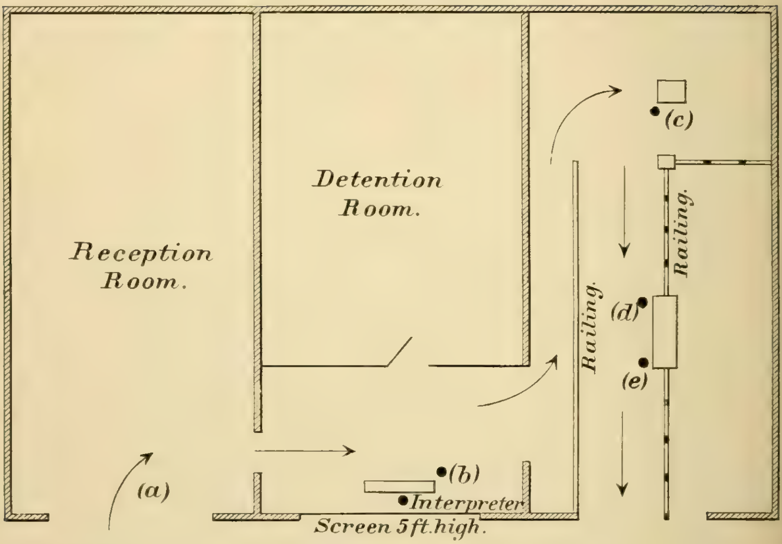


DIAGRAM.



Face page 127.

At his visit in May Surg. Wheeler succeeded in getting for us the use of the third room, and subsequently other improvements were added in the way of broad awnings, better furniture, and an adjustable fence for regulating the crowd outside.

When emigration was suspended the arrangement was as shown in accompanying sketch.

The people entered at (*a*), passed into the middle room one at a time, where they were examined; had their passports and cards stamped at (*b*), and then entered the third room, where their arms were washed at (*c*), and passed on to (*d*), where they were vaccinated, and had their cards stamped again at (*e*).

They were then conducted directly on board and had their baggage inspected, no one being allowed to come on board without the inspection cards properly stamped.

I first thought of examining the baggage on shore, but quickly saw that I could not control it at all.

The examination was then arranged as follows, and it has continued the same:

Tables were arranged on the ship's deck so that the people, on coming on board, had to pass in single file by the inspectors. Each passenger opened his hand baggage and placed it on the table for examination.

I determined from the start to reject all food found in luggage and on persons of passengers, and to also reject all bedding not entirely new, except on the French ships, where excellent disinfection machines made it possible to disinfect and return to the owners.

The people had been in the habit of bringing large quantities of cheese, sausages, and bread with them, often large boxes, both for their own consumption and to try to smuggle into America for their friends. I considered that if the practice could be broken up, and that I could be sure that the passengers would have access to no food supplies other than the ship's stores, it would be a very great gain and remove a very considerable source of danger.

Each valise was therefore rapidly but thoroughly searched, and all food found thrown out. In addition, a man standing in the passageway sounded the pockets and other receptacles for contraband articles.

We rapidly became very expert both at passing baggage and in detecting smugglers. It was not uncommon to find a man with the back of his shirt filled with small cheeses, or a woman with a girdle from which depended festoons of sausages under her dress. At first literally hundreds of pounds of food was confiscated. This could not be taken back to the city on account of the customs, and the people objected to the bumboats getting it if thrown overboard; so we burned it in the ship's furnaces. The same was true of the bedding. At first there was a great deal to throw out, but toward the last there was practically no food or bedding, and this was a great boon when disinfection and isolation became necessary.

While the passengers were having their small baggage examined the large baggage was passed on board by a separate gang and arranged in a roped inclosure on deck, and when the owners had passed with their hand baggage they came forward and opened their trunks.

We began by marking each piece examined with colored chalk; afterwards each piece was labeled as soon as inspected.

This baggage inspection was exceedingly laborious. It was under the charge of Mr. P. S. Twells, assisted by Mr. Rutherford Twells. When not examining emigrants Mr. Wickersham, Dr. Cerio, and myself all took a hand, and, indeed, when several ships were about to sail at the same time we were all needed. The opening and thorough inspection of one thousand pieces of baggage takes some time, and we were usually greatly handicapped by the stupidity and incompetency of the men furnished by the companies to assist.

Immediately after beginning the examination it was seen that no possibility existed of properly controlling the people as long as the system of embarking by small boats existed. The ships, lying about half a mile from the quay, were surrounded by a crowd of bumboats of all descriptions and overrun by water sellers, mendicant friars, and all manner of peddlers.

No sooner had a passenger passed the medical examination than he posted off to his boarding house and stayed there as long as the boarding-house keeper could make him. Hence it resulted that about 6 o'clock every evening there would be from 300 to 500 people all waiting to go on board at once with their baggage. To break this up I refused to work after 6.30 and had my inspectors withdraw, leaving the people to go ashore and return the next morning. This finally had its effect, but there was always more or less trouble.

Strenuous efforts were made to get the companies to use lighters and take the people direct from the examination, but with only partial success.

The agents admitted that it would be a great gain in time and convenience, but all alleged it would be impossible to do otherwise than they had always done. The fact of the matter was the clerks of the subagents, boarding-house keepers, and boatmen were all interested in preserving the custom as it was, and the companies were afraid of the combination.

When the ships finally came to lie at the quay the attempt was actually made to embark the people in small boats at the landing stairs and row them along the water front for a quarter of a mile, when there was nothing to prevent their having walked on board unaided. Even when I broke this up the clerks continued to collect a lira a head from the passengers and to pay the boatman his regular fee for doing nothing.

We got rid of the peddlers and bumboats and substituted lighters in part for the rowboats, but as long as the ships were out in the harbor we could never suppress the vexatious system altogether.

I found that the French ships had excellent live-steam disinfecting chambers and the two German ships smaller ones of a very inferior pattern, but that the Italian and English ships were entirely without any such appliances.

Strong representation to the companies failing to produce any effect, and having had considerable unsatisfactory experience with sulphur, I finally issued a circular, about the middle of June, announcing that in future nothing but live steam would be accepted.

The companies then appointed a committee to take charge of the matter, but there was trouble in procuring a site and other delays. At the time cholera appeared a concession from the Government for a suitable site had been secured and plans prepared under my direction for a suitable building, to embrace a large hall, examination and detention rooms, bathrooms, closets, and a fine steam disinfecting chamber capable of containing the contents of 250 valises at once. Work was to have begun at once, but the cessation of emigration has stopped everything for the time, and I am unable to say whether it will be resumed. Certainly if there is any way to wriggle out of the necessity the work will never be completed.

As already stated, the sanitary condition of the ships left much to be desired. No part of the work has caused as much worry and trouble as the attempt to get the ships into satisfactory order and keep them so. In trying to put these matters straight I have been greatly handicapped by the ambiguity and insufficiency of the passenger act of 1882. The necessity for certifying to the "good sanitary condition" of the ships in the bill of health was the only lever I had to work things with for the enforcement of the provisions of the passenger act, and belongs properly to the custom officers, who seem to give the matter no attention at all.

The sum of the improvements effected seems disproportionately small compared to the efforts expended in making them.

Adequate ventilation was provided on about all the ships, the character of all the latrines very much improved, and proper water supply secured; where lavatories existed provision was made for separation of the sexes; where there were none, rough but servicable troughs were provided, and one of them supplied with wash bowls and set apart for laundry purposes. Suitable water tanks were placed in women's and children's compartments; also commodes for night use. The stairways to hospital were changed so as to be practical for the sick, or doorways made through the bulkheads to render them accessible from the steerage without going on deck. Commodes were provided in hospitals; also tables, washstands, slop buckets, etc. Serviceable tables and benches were put in steerage, and many other details attended to. Indeed, the great bulk of the sum was expended in looking after a multitude of details too trifling to mention separately in a report, but in the aggregate of importance in preserving the comfort and health of the passengers. These matters were not put right without many struggles and conflicts with the ships' people. I have been repeatedly assured that there was no use providing a place for the people to wash, as they would not avail themselves of the opportunity, but have noticed when the washing troughs were put in the people hastened to use them. I had to make extensive changes in the ventilation of many of the ships; in several instances had to suppress a compartment entirely.

The worst ship handled was the *Chateau Lafitte*, an old Atlantic liner, chartered by a firm of emigrant agents. In this ship there was a compartment on the main deck berthed for 200, and having only one 12-inch ventilator forward. On the between-decks there was one compartment for 52 without any ventilation, and one for 230 with only one 7-inch ventilator forward. Some of the other ships were very little better.

Especial attention was given to the water supply from the first, and all ships required to refill their tanks with the superb Serino water at Naples. In the case of vessels coming from Marseilles I personally saw that the tanks were emptied.

In addition to the two formal inspections, the first before passengers or cargo were embarked, and the second just before clearing, it was my custom to visit the steerages and other portions of the ship at odd times, unaccompanied by officers or agents, and I occasionally made some interesting discoveries.

In the latter part of May there were five ships and about 6,000 passengers on hand at one time, and fearing that I could not do justice to them all, I cabled the request that Surg. Irwin might be ordered from Marseilles to take charge. Upon his arrival Surg. Irwin assumed charge of the medical inspection of the passengers, and assigned me to duty in connection with the preparation of the ships, supervising of cargo, and inspection of baggage. This plan worked admirably, and demonstrated clearly the necessity for two medical inspectors.

While detailed as just stated, I was able to expedite the embarkation of the passengers very much and to prevent the smuggling of bedding and other contraband articles into the holds, either for shipment as freight or for the purpose of temporary concealment. On one occasion I saw from a neighboring ship a bale of very dirty mattresses and bedding being passed into a vessel's hold. I said nothing about it at the time, but when the ship was ready to clear I withheld the bill until the stevedores were sent for, the cargo partly moved, and the bedding taken out. After this I had little trouble with bedding. In innumerable other small matters the more or less continual presence of an inspector about the ships was an advantage. Surg. Irwin remained in charge about three weeks, and on being ordered to rejoin his station Dr. George Cerio was appointed assistant medical inspector and is still serving in that capacity.

In consequence of the appearance of smallpox on the steamship *Alesia* while en route for New York, we began on the 20th of May, under Department orders, to vaccinate all passengers. This greatly increased the work, but I think was the best plan, the vaccination aboard being exceedingly untrustworthy. The companies were required to furnish the virus, and here again we had a continual struggle with purveyors to get honest service. Forgery of the signature of the superintendent of the vaccine farm, erasure and change of date upon the packets, and other frauds had to be continually watched for. A very large proportion of the passengers had been previously vaccinated, but we decided not to take any chances, so vaccinated all but very recently vaccinated small children.

About the end of May Surg. Wheeler visited Naples on a tour of inspection and remained about a week. His presence strengthened my position a great deal, and his energetic representations to the companies secured better facilities for the examination.

During the spring the Government authorities had a large shed erected on the quay for the examination of passengers by the port commission, and a channel dredged deep enough to allow all the ships to go alongside. The shed was of sufficient size to accommodate 1.200 or 1,400 passengers and was very conveniently arranged for the purposes of their examination. The companies tried to obtain permission to use the building when not required for Government purposes, but did not succeed.

This shed was first used the middle of July, and its use was an immense advance; no friend of humanity could fail to rejoice that the days of the examinations as held on board the ships were over. It was also a grand gain for us. I was able to insure the prompt delivery of the people on board as soon as they had passed my examination, and the work of inspecting and labeling the baggage was very much expedited.

On July 15, the steamship *Karamania*, of the Anchor Line, cleared for New York with 465 steerage passengers. They were all carefully examined and vaccinated and all food excluded from their baggage. They were all Italians (with the exception of some thirty Greeks) partly from the neighboring provinces and partly from Sicily. The people had been in town from one to three days in the ordinary emigrant boarding houses. On the night of the 16th two cases of illness of a suspicious character were reported to the authorities. On the next morning there was another case in Portici, a suburb continuous with the city on the east; that day, the 17th, there was another one in the adjoining section to the one where the first cases occurred. The same day a sailor, returned from leave, died in the naval hospital. While these were the first cases known to the sanitary authorities of the province, it is the opinion of the chief sanitary officer that there had been previous cases, and the fact that cholera developed on the *Karamania* on the fourth or fifth day out makes it practically certain that he is right. Indeed, I have since discovered that there were two cases reported to the municipal authorities about June 1, and that the information was withheld from the principal authorities. These two cases were not followed by any others, however; so it seems settled that the subsequent outbreak was of independent origin.

The result of the bacteriological examination in the first case was discovered accidentally by Dr. Cerio, who had been instructed to keep on the lookout for such matters, on the morning of the 18th.

I had just completed the preliminary examination of the steamship *Massillia* when the news reached me. While the occurrence of four cases of cholera in a population of 600,000 did not make of Naples an "infected port" in the meaning of the regulations, I decided to take no chances, so cabled the Department the facts, and at once made inquiry as to the whereabouts of the *Massillia's* passengers. Luckily none of the people had arrived in the city, as the ship was not to leave until the 22d, and I was able to make arrangements by which the people could be met at the station and conducted directly on board with unopened baggage. On arrival at the ship they were carefully looked over, and both passengers and baggage rigidly searched.

The crew were confined aboard.

We had considerable trouble at first with bumboats, but by keeping sailors with hot-water hose, at several points on both sides of the ship, managed to keep all undesirable people away. Otherwise the passengers would have gorged themselves with bad fruit, uncooked salads, etc.

At night the ship was warped out some 50 feet from the quay, all gangways closed, and guards stationed. Absolutely no one except our inspectors, the agents, and the necessary clerks were permitted to board the ship.

In the meantime, on the 20th, I called upon the prefect to request information.

The "capo di cabinet" at once admitted that there had been four cases of cholera early in the week, but stated that there were no others, and that if I could send to the prefecture I would be, unofficially, kept posted. I was much reassured by this, but still thought best, as just narrated, to be careful about the *Massillia*.

Just as the ship was clearing, I learned from unimpeachable authority that there had been 16 cases and 9 deaths since the 17th. As none of the passengers had stopped in the city or had contact with infected persons, I cleared the ship. The result justified my action.

The authorities then began a careful policy of suppression. Private and press telegrams were refused, and all news withheld from local papers. I therefore organized, with the invaluable assistance of Mr. Wickersham, a system of private news gathering.

In order to have a check we arranged for several distinct sources of news.

This system has worked admirably and was afterwards extended to one of the neighboring towns.

The probable origin, course, and management of the cholera outbreak does not properly have a place in this report, and it is merely necessary to note that the disease rapidly and almost simultaneously invaded a great number of the districts from which the passengers came.

In default of other facilities, no barracks being obtainable, I arranged to isolate the passengers for the *Weser* and *Cachemire* aboard, first arranging to reject utterly all from Naples and vicinity, and to have both passengers and baggage transferred direct from station to ship.

I also had manifests of stores to be embarked submitted to me, substituted live for dressed beef, and had potatoes and other similar stores shipped in from points outside the city. The crews were rigorously confined aboard while in port, and the ships lay in isolated position from half to three-fourths of a mile off shore. The passengers arriving in small parties during three days made them easier of control, but greatly increased the work of inspecting and caring for them.

As the passengers had not been in any way in contact with infected places or persons, I decided to omit the bath and disinfection of outer clothing, the people being an exceedingly cleanly and well-clothed lot.

The period of isolation was reckoned from the time of the arrival of the last passenger aboard.

On the *Weser* I inspected and vaccinated 991 steerage passengers.

Preliminary to disinfection I inspected all the baggage and threw out a small quantity of food and old bedding. In this connection I again take occasion to call attention to the good results of the policy inaugurated in April, of rigorously excluding all eatables and bedding, even to the extent of searching the individuals.

The knowledge of this rule has almost stopped the attempt to smuggle anything aboard.

The North German Lloyd Company, to which the *Weser* belongs, considered it better to have the ship cruise about the bay and vicinity with my inspector on board, returning every day for my visit, than to have her lie at anchor in the harbor. In this I heartily concurred.

The large baggage, except some belonging to a cabin passenger from Naples, was not steamed, it having been transported "in bond" from station to ship. Thirty minutes' exposure (about 3 pounds pressure) was used for all hand baggage. The *Weser* began her period of isolation on the 26th; the next morning she returned to the harbor for my visit, but was met by the police boat and ordered to sea at once.

She accordingly stood off and on at a distance of about 150 miles. On the 31st she returned on the plea of shipping an extra doctor, the company having directed such action as an extra measure of precaution. I then boarded her and made a careful inspection. She was in admirable order throughout, and my inspector reported that she had been maintained in that condition during her cruise. The people were all well and cleanly. I therefore issued the bill of health, stating fully thereon the circumstances attending the isolation and disinfection.

The reason for the action of the authorities was that the semaphore stations along the coast were signaling to know the reason for the ship cruising about the bay and vicinity, and the explanation might have interfered with the policy of suppressing the news.

The passengers for the *Cachemire*, some 208, were embarked on the 25th and 26th, under the conditions already stated. Just as the work of disinfecting the luggage was half completed (dry steam at 105° C., 4½ pounds pressure being used), a letter was received by the consul, Mr. Twells, from the prefect, in which he stated that he was informed that I was detaining people on board ship, and that such a measure was either an act of quarantine, and as such an infringement of the prerogatives of the Government; or else an imprisonment without warrant of law. Neither being permissible, he desired to know if his information was correct, in order that he might take the necessary steps.

Mr. Twells referred the letter to me for reply, and I at once wrote the prefect that I was fully aware of the objectionable features of the plan and had only adopted it in order to dispose of the ships then on hand, and that under no circumstances would I have anything to do with such measures in future without his consent.

In accordance with the terms of my answer, I withdrew my inspector from the *Cachemire*, but transferring him to the *Danzig*, which was laying near, was able to be sure of the maintenance of the isolation. The *Cachemire* was about a mile from shore, and it is due to the officers and company to say that the most rigid steps were taken to maintain the isolation.

There were a series of negotiations on the subject of the prefect's order. The French consul finally received permission for the work on the *Cachemire* to be completed. She accordingly completed her five days without anything occurring. I was on board most of the time and had excellent opportunities to observe the condition and care of the people. She sailed in the 1st instant and arrived all well.

While the *Cachemire* was under treatment, I examined, at the request of the North German Lloyd Company, some 370 passengers for the *Werra*, who were taken from here by the *Danzig* to Genoa. It was arranged by Dr. Brown that the time spent at sea should count in the period of isolation. I also had all their baggage and clothes carefully searched for food and other articles which might give rise to infection.

While the *Weser's* people were being embarked, the S. S. *Hesperia* of the Anchor Line arrived to take passengers. I made a preliminary visit to the ship and found that the alleged steam chamber was only dry heat and moist steam. In reply to the agent's inquiry, I told him that the people were better on board than ashore, but that I saw no reason to believe his ship would go. This was on the 26th instant.

When the authorities forebade further isolation, the *Hesperia* continued to embark passengers, but in accordance with my promise to the prefect, I refused to have anything to do with her. Just at this time the *Krön Prinz* came in, and the suggestion was made that she be cleared from Salerno. I furnished the company with the following code of rules to be observed:

NAPLES, JULY 29—SHIP TO SAIL AUGUST 11.

1. *Crew.*

(*a*) If possible ship no one at Naples. If any must be shipped, all baggage and dunnage to be disinfected.

(*b*) Confine as closely as possible while in port seven full days before embarkation of passengers. Confine absolutely if in port of Naples.

2. *Cargo.*

(*a*) If macaroni is embarked at Naples, must furnish custom-house papers showing transport "in bond by rail from uninfected point of origin to quay."

(*b*) Embark no fruit at Naples.

3. *Passengers.*

(*a*) Take none from districts whose natural or possible route would take them to Naples or vicinity. (Note.—All passports being examined, a reliable control is had over places of origin.)

(*b*) Have passengers at Salerno on day before sailing.

(*c*) Take no one from Naples to Salerno except agents themselves or their immediate representatives and members of consular staff.

4. *Food supply.*

Take absolutely no fruit or vegetables from Naples and vicinity, and submit invoices of other stores before embarking.

Salerno being on the other side of the Sorrentine peninsula, with lofty mountain ranges between it and Naples and the scantest of intercourse with that city, it was a very good port of embarkation, especially as more than half the passengers could be brought up from Sicily by sea.

It was of course first necessary to obtain Government consent, as only Genoa, Naples, and Palermo are licensed as emigrant ports. Pending these arrangements, your cable ordering five days' isolation at all Italian ports was received, and the project was abandoned. The plan seemed a good one at the time, but subsequent developments made it plain that it might have been risky.

Great pressure was brought to bear to get the authorities to give the written permission I demanded, and also to induce me to waive the written permission. Failing to obtain their ends the companies sent representatives to Rome.

As a result the ministry ordered the granting of the permission, and a letter to that effect was received by the consul.

During all this time the *Hesperia* had been at anchor a mile and a half offshore, probably rigidly isolated, but of course not under my observation; there had been several outbreaks of discontent among the passengers at their long delay. The company had built a superheater on deck, and converted the iron-walled ice house into a disinfecting chamber, in which 5 pounds pressure with superheated steam could be obtained. I first steamed all the bedding and then proceeded with the bathing and disinfecting.

For the former I had the four large lifeboats, some 16 feet long, secured on the hurricane deck and inclosed with canvas screens. For the women a number of tubs were brought on board and a trained nurse engaged to take charge. When operations began a riot broke out among the passengers, upon which I withdrew my men and refused to do anything until the Italian authorities adjusted the matter. This they did, the captain of the port giving his word that they should go in five days.

The next morning there was another outbreak, upon which the Government officials divided those who were willing to have their clothing disinfected from those who preferred disembarkation. Out of 400 only 142 desired to stay it out; but the arrival of orders to refuse bill pending arrival of *Cachemire* and *Weser* made further work unnecessary.

I made the best apologies possible to the port officials for having unintentionally placed them in a false position, and I desire to record that at all times my relations with all of them have been most cordial. While this was in progress I had arranged as follows about the *Krön Prinz*, which was to have sailed on the 14th instant, and some of whose passengers were already on the way to Naples at the time your message of the 7th arrived.

The passengers were to be met at the station with omnibuses and transferred directly to the steamship *Danzig*. Then they were to be examined, vaccinated, bathed, disinfected, and isolated for five days. At the conclusion of the five days the passengers were to be put on board the *Krön Prinz* and the ship cleared.

I respectfully submit that isolation on a tender properly equipped with bathing and disinfecting appliances and lying a mile from shore is very much superior to the ordinary barracks, both from the standpoints of the passengers' welfare and that of the efficiency of control. As the order to withhold bill until the *Weser* and *Cachemire* arrived would have entailed great delay, the company abandoned the sailing.

The decision of the Department not to accept isolation on a tender practically suspended emigration from this port on August 8, and I have therefore, as already stated, extended the scope of this report to include that date.

It may not be amiss to include here, for purposes of comparison, a brief notice of the effect of the precautions taken with the *Massillia*, *Cachemire*, and *Weser*, and the fate of the other vessels leaving Naples about the same time for North and South American ports.

From the 15th of July to the 17th of August there were eight vessels left Naples with steerage passengers. On the first of these, the *Karamannia*, the passengers and baggage were inspected, but no other precautions taken, the health of Naples being good, as far as I knew.

On the voyage cholera developed, and there were, I believe, some nineteen cases in all, with seven or eight deaths.

Of the remaining seven, three, the *Massillia*, *Cachemire*, *and Weser*, were carefully handled, passengers isolated, baggage disinfected, and food supply regulated. All escaped infection.

The remaining four all cleared for South America without precautions.

The *Carlo Regis* left Naples on the 31st of July. She arrived at her destination with cholera, was turned back, and has just completed her detention in quarantine. She lost 201, of which 100 were from cholera and 101 from measles. As it is reported that her doctor was ill on the voyage it is extremely probable that many of the "measles" deaths were choleraic.

The *Andrea Dorio* left Naples August 16. She arrived at her South American destination with a record of 90 deaths en route. She is now overdue on her return voyage, having been turned back.

The *Remo* left Naples August 17. She has just returned to the quarantine station, after losing 87 with cholera.

The *Vincenzio Florio* left Naples August 17. She arrived at Rio after the loss of 12 lives from cholera, and is now on her way back.

To sum up, then, eight ships left Naples within a month. Three were prepared and escaped infection; five were unprepared and all had cholera.

There is no absolute proof that the precautions taken with the three ships were the cause of their escape, but surely sanitary science has a right to claim that all the probabilities point that way.

In trying to arrive at definite and well-founded opinions as to the merits of the medical inspection at foreign ports, or to formulate suggestions for the amendment of the law and regulations, one is constantly met by the difficulty in separating the purely sanitary view of the question from the much larger question of the regulation and restriction of immigration. The two questions are dependent, and yet entirely distinct. Strictly speaking, the medical inspector has nothing to do with the advantages to be derived from a social standpoint, from the medical inspection of emigrants at their points of embarkation. We have nothing to do with the regulation, restriction, or improvement in character of immigration. Our functions begin and end with the prevention of the introduction of contagious disease.

The first question to be considered is the desirability of making the inspection service a permanent one. I am strongly of the opinion that the facts do not justify such a step.

Unquestionably the inspection as conducted this summer has been of the very greatest utility. There can be no reasonable doubt that cholera would have invaded the United States but for the rigid inspection instituted at the ports of embarkation. But in the normal state of affairs there may be five years together when there is no danger of cholera. The only other disease that is particularly to be dreaded among the emigrants of to-day is smallpox, but the general prevalence of vaccination and the comparative ease with which the disease can be confined when it does appear reduces the danger so much that it is certainly not worth while to keep up an elaborate system of inspection solely on its account.

If the law were amended so as to give the medical officer authority to reject for other than infectious and contagious diseases a great deal more might be done, but it is a question even then if the work can not be done more thoroughly at the ports of arrival, as part of a settled and rigid system of inspection, both medical and lay. There seems to be something more than a probability that there will be cholera in Europe next summer; and, therefore, I believe that the present system should be continued until the danger is past. As soon as that time comes, probably by next fall, I think the inspectors should be withdrawn. After that it might be well to keep two men abroad with authority to visit the different ports and keep posted as to their sanitary conditions, but even this is doubtful.

When there is no cholera to be found there is really nothing for an inspector, acting under the present law, to do. He can take measures toward improving ventilation and other sanitary conditions on board ship, it is true; but a properly conducted inspection system at the port of arrival would be much more effective, for then fines could be assessed and collected. He can clear the ships in good order; but if the captains are not good ones he can not insure their being kept clean. In brief, my opinion is this: Put the drafting of a new passenger act into the hands of a competent board and assign the duty of seeing that its provisions are properly enforced to medical officers at the various ports in connection with the maintenance of all quarantine systems and the medical inspection of arriving emigrants.

Our relation to the consuls at our respective ports should be considered. I desire to preface my remarks on this point by the statement that my own relations with Mr. Twells, Colonel Wood, and Mr. Seymour, the consuls at Naples, Castelamare and Palermo respectively, have been of the most cordial and satisfactory character.

Although the strict enforcement of regulations absolutely wiped out the principal revenues of these gentlemen's offices, there has never been a question raised as to my entire control of all sanitary affairs, nor any friction, personal or official. Mr. Seymour voiced the sentiment of these gentlemen in writing, "What we both want to do is to keep cholera from getting into our common country; under such circumstances there can be no disputing about questions of official precedence." I have also been in more or less constant correspondence with the consuls at Trieste, Malta, and Leghorn, and am under obligations to them all for information and assistance.

In spite of my own pleasant experience I am strongly of the opinion that it is asking too much of consuls to expect that they will welcome into their offices the representatives of a different department, whose presence may very much reduce their own importance and revenues. In many instances we seem to play the rôle of the doctor at Sancho Panza's famous banquet. A shipper enters with a bundle of papers and the consul with visions of fees makes him welcome. Suddenly the medical inspector stretches out his wand and says "Unclean," and straightway the shipper, fees, and, probably, the consul's good humor vanish together.

Over and above the question of fees is the question of precedence and of conflicting duties. Our usefulness would be utterly destroyed if we had to report to the consuls and submit to their direction. The absurdity of putting specialists in sanitary affairs under the direction of consuls with no training in such matters is too manifest to need argument for its proof. On the other hand, it seems that we would be at great disadvantage in many ways, especially so as long as we have to look after cargo, if we were not located at the consulates.

Probably the best plan is for it to be made perfectly plain to the consuls, by instructions from the State Department, that the medical officer shall have absolute control of all sanitary matters, and that his action is subject to review only by his own official superior; and then amend the regulations so as to relieve us of the necessity of looking after cargo, except rags and such food stuffs as are consumed uncooked. I do not believe that many of the present restrictions on cargo are sanitary necessities, and the doing away with them would remove one of the principal causes of friction. Certainly with our present vague and indefinite status it is not to be wondered at if there are conflicts of authority, and if the law and regulations remain unchanged we would be better off with separate offices, that is, if the inspection service abroad is continued at all, a course, which I again venture to maintain, is not to be desired—

1. Because we are virtually trying to control a huge river by checking its innumerable sources, instead of concentrating our energy on its narrowest point—a most unphilosophical and expensive method.

2. Because, unless each medical inspector has at his command a number of assistants, medical and lay, sufficient to enable him to see personally that his orders are carried out, he can never be sure that isolation is maintained or disinfection properly done. And when there are a thousand people to be controlled against their wills, and the employees of the steamship companies have to be largely depended upon for the work, there are innumerable opportunities for evasion.

Here I was fortunate enough to secure three capable and energetic Americans, whom I could trust, to take charge of the work, thus making, with Dr. Cerio and myself, a force of five. Yet we had to work for twelve or fourteen hours at a stretch, doing the fatiguing work of handling, searching, and labeling hundreds of pieces of baggage, standing guard by day and by night to see that isolation was maintained, or looking after a thousand important details. But this sort of work can not be kept up forever. I doubt if any of us could have stood the strain for many weeks longer, and to provide sufficient force at all the ports to do the work carefully and thoroughly would entail great expense, more than sufficient to maintain at the proper American ports an adequate system of inspection and quarantine station.

3. Because the attempt to maintain a permanent service on the present lines will certainly lead to international friction.

To sum up, I believe that when cholera is present in Europe the present system is of the greatest value, especially if combined with a thoroughly organized and coherent quarantine system at American ports. At other times it is useless.

I have already expressed the opinion that in any event the cargo restrictions should be greatly modified, or at any rate much wider latitude given to the judgment of inspectors.

With the exception of rags and food stuffs, I am not aware that there is any evidence of the transmission of cholera by means of merchandise. In the presence of a great epidemic it is possible that such a thing might happen, but when there are twenty-five or thirty cases of cholera in a city of half a million population it seems hardly necessary to place restrictions on many of the articles mentioned in the regulations.

The conditions are manifestly different at different ports. No one unfamiliar with the places of origin, character, habits, and route of travel of the steerage passengers going via any particular port is competent to express an opinion of the methods to be employed there.

At Naples the homogeneity of the people, their habitual good health, facility of arrival from their homes, and general good condition simplify the problem very much in some respects. On the other hand, their being all Italians complicates the relations of their Government toward our inspection and renders the isolation and management of them more difficult.

The first essential for thorough work here is that the medical officer should be formally given charge of all southern Italy and Sicily and have considerable latitude allowed him in the enforcement of the regulations. This necessitates the placing of great responsibility on his shoulders, but Naples is no place for a man not ready to back his judgment.

The officer here should have at least one medical assistant, as at present, and also authority to employ such inspectors as he needs and a clerk.

I have at present charge of the work at three consulates and four consular agencies, and also several cargo ports where there are no agencies, but have to a certain extent acquired much of the jurisdiction, more by the force of circumstances and by implication than by direct orders. Without control of this wide territory the hands of the man at Naples would be partially tied, and he should have explicit assignment to its charge and sufficient assistance to handle it properly.

There would seem to be no reason for demanding the detention and isolation of passengers during the winter, but a systematic plan of detention should begin early in the spring.

There are probably a hundred towns in southern Italy that are infected, some very badly, and there are likely a very large number of villages in the same condition. Such being the case, it is hardly possible that there will not be an outbreak of cholera next summer.

If the work is to be done here at all it should be done thoroughly, and all the companies notified that isolation and detention will begin May 1. In the meantime the companies should be compelled to provide suitable facilities for the inspection of passengers and the inspection and disinfection of their baggage; not makeshift accommodations, but well-designed and scientifically arranged ones.

I desire in conclusion to especially express my indebtedness to the consul, Mr. J. S Twells, for the assistance he has rendered me in the fulfillment of my duty.

Very respectfully,

G. B. YOUNG,
Assistant Surgeon Marine-Hospital Service.

REPORT OF ASSISTANT SURG. WILLIAM G. STIMPSON, DETAILED FOR DUTY AT GLASGOW, SCOTLAND.

CONSULATE OF THE UNITED STATES OF AMERICA,
Glasgow, Scotland, August 1, 1893.

To the Surgeon-General U. S. Marine-Hospital Service, Washington, D. C.:

SIR: I have the honor to make the following report upon the transactions at this station from July 10, the date of my arrival in Glasgow, to July 31, in compliance with your circular letter to medical officers serving at foreign ports dated July 6, 1893.

1. GENERAL ACCOUNT OF SERVICES.

Before making any changes in the routine work of the station I thought it best to become familiar with the character of the emigrants that sailed from this port and with the methods already in use in enforcing the quarantine laws and regulations of the United States. With this end in view I went to the wharf from which the next vessel sailed, the steamship *Anchoria*, of the Anchor Line, for New York, about two hours before the ship's departure. I inspected the foreign emigrants before they went on board and found them all well. They were a hard-looking class of people, a great many Russians and Poles being among them. They were not clean, and their clothes were old and dirty. The emigrants brought beds made of straw and seaweed with them from Europe. From inquiries I have since made I find that these beds are purchased by the emigrant as he leaves the continental port. During the cholera epidemic of last year they were not allowed to bring them into England, and the vessel on which the emigrants came either took the beds back or threw them overboard. The Scotch emigrants, if they wish to, can buy their beds from stores near the wharf at a cost of 18 cents each. The baggage consisted of trunks, boxes, baskets, bags, and bundles of all shapes and sizes. The baggage and beds I found had been disinfected by sulphur and the yellow labels attached. The physician of the board of trade of the city of Glasgow and myself then inspected the crew. The crew was mustered, an officer called off the names from the crew list, and each man answered to his own name. One man was drunk, but the rest were strong and healthy. After inspecting the crew we went over the steerage compartments of the ship. The compartments were clean and well ventilated, but the woodwork needed painting badly, so that everything had a dull and worn appearance. Each compartment had a cabin in one corner set aside as a hospital, in which were clean beds. The ship also had two hospitals on deck, one on each side, for contagious diseases, which were fitted up with clean beds, bed chairs, pans, etc. In one of the hospitals I saw a number of bottles and packages, which the surgeon of the ship told me contained disinfectants and were to be used on the voyage. The water-closets were ample, and were kept clean by running water.

The cabin passengers were already on board of the vessel. The other passengers were now allowed to embark while the physician of the board of trade and myself inspected them. The board of trade only recognizes two classes of passengers, the cabin and the steerage, the second cabin or intermediate being classed as steerage. The board requires a medical inspection of all steerage passengers. The second cabin passengers were mostly from the British Isles and were all healthy. The emigrants came next, most of them bringing their hand baggage with them. It was an easy matter to tell a Scotch emigrant from one from the Continent. The clear complexion, the rough but clean clothes of the Scotchman making him readily distinguishable.

The next day, July 14, I visited the Allan Line steamer *Peruvian* just previous to her departure for New York, and inspected the emigrants. They were of the same class as those that had sailed the day before by the Anchor Line. Their baggage had been disinfected by sulphur. The *Peruvian* is known as a cattle ship, as she brings back cattle from the United States. She was clean and well ventilated. The woodwork of the steerage compartments had been recently painted. The steerage passengers occupied the same compartments in which the cattle were brought over from America.

On July 17 the consul and myself called upon the agents of the two lines of steamships carrying emigrants to the United States and informed them that after that date the baggage of all continental emigrants would have to be disinfected by steam, and the consul, upon returning to his office, sent a letter to each line stating this fact. The following is a copy of the letter:

"CONSULATE OF THE UNITED STATES OF AMERICA,
"*Glasgow, Scotland, July 17, 1893.*

"GENTLEMEN: I have the honor to inform you that in order to carry out the present laws and quarantine regulations of the United States it will be necessary hereafter to disinfect the baggage of all continental emigrants by steam, unless the baggage has already been disinfected under the supervision of the consul or medical officer of the U. S. Marine-Hospital Service at the port of departure from Europe.

"Very respectfully,
"ALLEN B. MORSE, *U. S. Consul.*"

July 17 being at the beginning of what is known here as "Fair week," when every one takes a holiday and very little work is done, there was only one vessel carrying emigrants, the *Norwegian*, of the Allan Line, leaving during this week for the United States, so it was agreed that the baggage of the continental emigrants on this steamer should be disinfected by sulphur as hitherto, but that after that date all such baggage should be disinfected by steam.

July 19 I visited the emigrant houses in company with an inspector of the sanitary department of the city. There were very few emigrants in them at the time. The Anchor Line has one immigrant house in use at the present time, and the Allan Line has two. These houses were clean and kept in good order. The floors were well scrubbed and all the windows had blinds. The houses are under the supervision of the sanitary department of the city, and a sanitary inspector visits them at least once a day. His business is to report any case of sickness of a contagious character, to see that everything is kept clean, and that the emigrants are not crowded, 400 cubic feet of air space being allowed to each person. The beds were old and soiled, but the bed linen was clean. There were one or two water-closets on the inside of the houses, but on the outside there were only privies containing tubs, which are emptied at regular intervals by workmen of the sanitary department. One of the houses of the Allan Line had a large dining hall in which the emigrants were allowed to congregate during the day in order that their rooms might be kept in better condition. There is plenty of water on all the floors of these houses, so there is no excuse for the emigrants not keeping themselves clean. The matrons told me, however, that it was impossible to make the emigrants wash themselves, but it seems to me a little supervision on the part of the companies here would remedy this. While visiting the New York quarantine just previous to my sailing for this port, I boarded a German vessel in company with the health officer. The vessel had a large number of immigrants and they were as clean as if they had just come out of the bath. The captain took a great interest in his passengers and he informed me he had made each immigrant wash at least once a day, and that he had had the hair of all of them cut. This might be done at the emigrant houses here if someone in authority had charge of the matter. I have no supervision over these houses although I visit them whenever

I see fit. I have recommended that emigrants be required to wash themselves, but this suggestion has not been carried out. On July 20, the physician of the board of trade and myself visited the steamship *Norwegian*, which was to sail the next day for New York and inspected the provisions. This inspection is very thoroughly done by the physician of the board of trade as the law requires him to certify that a certain quantity of good provisions are on board. He has a list on which he checks off the exact amount of each article, and if anything is bad he requires it to be replaced by that which is good.

2. SANITARY CONDITION OF GLASGOW.

The city of Glasgow is situated upon the river Clyde, about 14 miles above the Firth. The total population of the city and closely contiguous suburbs, according to the census of 1891 was 780,414. The present officially estimated population is 788,000. There are, however, many large towns within a radius of 40 miles, so this does not give an idea of the immense number of people living in the neighborhood of the city. The affairs of the city are controlled by a board of police commissioners, of which the lord provost is the president. The sanitary department is under the management of the board of police commissioners, and its officers are appointed by this board. The corps consists of a medical officer of health, an assistant medical officer of health, a chief sanitary inspector, 5 district inspectors, 16 nuisance inspectors, 9 epidemic inspectors, and 5 female inspectors. This department has entire control of all matters relating to the health of the city. Its inspectors are required to visit all the houses, particularly of the poorer classes, and see that they are kept clean, that they are not crowded, and that the plumbing is in good condition. If the inspector finds anything out of order he orders it to be fixed, and if it is not fixed, he has power to summon the tenant before a magistrate. If any persons are found too old or feeble to take care of themselves they are sent to the poorhouse, the sick, if not able to employ a physician, are sent to the infirmary, and all cases of contagious disease to the Belvidere Hospital. The infectious disease (notification) act, 1887, also requires the householder and the attending physician to notify the sanitary department of the city as shown by the following extract:

"Where an inmate of any building used for human habitation within a district to which this act extends is suffering from an infectious disease to which this act applies, then, unless such building is a hospital in which persons suffering from an infectious disease are received, the following provisions shall have effect, that is to say:

"(*a*) The head of the family to which such inmate (in this act referred to as the patient) belongs, and in this default the nearest relatives of the patient present in the building or being in attendance on the patient, and in default of such relatives, every person in charge of or in attendance on the patient, and in default of any such person the occupier of the building, shall, as soon as he becomes aware that the patient is suffering from an infectious disease, to which this act applies, send notice thereof to the medical officer of health of the district.

"(*b*) Every medical practitioner attending on or called in to visit the patient shall forthwith, on becoming aware that the patient is suffering from an infectious disease to which this act applies, send to the medical officer of health for the district a certificate stating the name of the patient, the situation of the building, and the infectious disease from which, in the opinion of such medical practitioner, the patient is suffering.

"Every person required by this section to give a notice or certificate who fails to give the same shall be liable on summary conviction in manner provided by the summary jurisdiction acts to a fine not exceeding 40 shillings.

"In this act the expression 'infectious disease, to which this act applies,' means any of the following diseases, namely, smallpox, cholera, diphtheria, membranous croup, erysipelas, the disease known as scarlatina or scarlet fever, and the fevers known by any of the following names, typhus, typhoid, enteric, relapsing, continued, or puerperal, and includes as respects any particular district any infectious disease to which this act has been applied by the local authority of the district in manner provided by this act."

After the patient has been removed to the fever hospital, the room is fumigated with sulphur and whitewashed. The persons living in the same house or those who may have been infected are removed to a reception house near the hospital, and their clothing, etc., disinfected by steam.

The Belvidere or fever hospital is built on the pavilion system, as seen by the accompanying plan. There is room for 390 beds on the scale of 2,000 cubic feet for adults. In connection with the hospital there is a Lyons disinfector, a cremator, steam carpet machine, and a washing house, in which 1,000 articles per day are treated in one way or another. The smallpox hospital, although situated on the same grounds, has no connection with the fever hospital. It accommodates 150 beds. Persons suspected of being infected with smallpox are detained in a reception house for seventeen days. This house contains 24 beds.

The sewage of the city empties into the River Clyde, making its water dark and offensive. The odor is perceptible some distance from the banks, and is so disagreeable that it is very unpleasant to ride on the different ferries which cross from one side to the other. Numerous plans have been devised by engineers to prevent the Clyde from being contaminated with sewage, but all of them have involved such an enormous outlay of money that none have as yet been considered feasible. The underground railroad, however, which is being constructed under the city, has partly solved this problem. In order to dig the different tunnels it has been necessary to cut through and turn the course of some of the sewers. The sewage thus turned aside has been conducted to a place called Dalmarnock, a few miles outside the city, where precipitation works are now being erected.

The houses in Glasgow are nearly all alike. Before a house can be built a permit has to be obtained from the board of police commissioners, and the house has to be constructed in accordance with certain rules laid down by that board. Some twenty years ago the older and squalid portion of the town was torn down and rebuilt, so that now all the buildings, even in the poorer parts of the city, are large and commodious, with plenty of air space about them. A number of model lodging houses have been built for men and women. I visited one of these houses used by men and found a large smoking room, a dining room, and kitchen, and in the upper stories rows of sleeping bunks. There are facilities for bathing and washing clothes, and everything was scrupulously clean. There is a store in connection with the building in which provisions are sold at cheap rates, and the man is furnished cooking utensils and allowed to cook whatever he wishes. All these facilities are afforded to a poor man for 6 or 8 cents a day.

The city of Glasgow is supplied with water from Loch Katrine, 40 miles distant. This is one of the purest waters in the world, and every precaution is taken to prevent it from becoming contaminated with any animal refuse. The present waterworks were opened October, 1859, but before this the city obtained its water supply from the Clyde. Nothing can better illustrate the necessity for pure water in a city than the following table, taken from Dr. J. B. Russell's paper on the Sanitary Condition of Glasgow in the Transactions of the Seventh International Congress of Hygiene and Demography, Vol. XII, showing the death rate from cholera during the last sixty years:

	Deaths.
1832	3,166
1848-'49	3,923
1853-'54	3,885
1866	53

Cholera has not gained a foothold in this city since 1854. The city was visited by cholera in 1866, and 53 persons died. The fearful mortality of over 3,000 was, however, not reached during this visitation, and this was undoubtedly due to the fact that the people had stopped using the polluted water of the Clyde.

Two cases of cholera occurred in 1892 among Russian emigrants passing through the city en route for the United States. The following history of these two cases has been kindly given to me by Dr. A. K. Chalmers, assistant medical officer of health, taken from his report dated September 5, 1892:

"On the afternoon of Thursday, August 25, a party of emigrants (33 in number) arrived in Glasgow, having landed at Leith, per steamship *Wiemar*, from Hamburg, on the same day. They were boarded in the Atlantic Hotel, York street, where they were immediately inspected by Dr. Hardie, who is retained by the shipping companies engaged in the Atlantic emigrant business for the purpose. All seemed to be well, but late in the following day (26th) two of the number were seized with vomiting and diarrhea—one a male adult, three days and twelve hours after leaving Hamburg; the other a woman, three days and seventeen hours. They were not related. Dr. Hardie was summoned on each occasion, and at once communicated with Belvidere, whither they were removed early on the morning of the 27th. From inquiries made by Dr. Allan at the hospital there is some doubt thrown upon the freedom from diarrheal illness in the case of the woman who landed at Leith. This merely emphasizes the importance of the orders which have subsequently been issued by the board of supervision, empowering the inspecting medical officer to detain passengers from suspected localities, even in the absence of obvious or acknowledged illness. Close observation alone will in such persons enable one to be certain that no diarrhea exists.

There were 31 emigrants remaining. These were shifted from the flat in which the sickness had occurred, and an epidemic inspector and the interpreter were instructed to observe and control their movements. On the 28th, however, it was thought best to transfer them to the Southern Reception House, along with four female servants belonging to the hotel, who had been in various ways exposed to infection from the sick. There they were medically inspected every six hours, and means were taken to make sure that no diarrheal symptoms whatever could elude detection. The interpreter resided in the Reception House as a necessary means of communication. All articles of bedding and clothing which had been exposed to gross soiling and infection were burned, and other articles were disinfected in the usual way.

"A bacteriological examination was made and the cholera bacillus found. The emigrants recovered and were ultimately shipped to the United States."

There were 32 deaths from smallpox in the city during the past winter. The last death occurred June 7. The disease has now almost disappeared, there being only four convalescent cases in the hospital.

3. CHARACTER OF VESSELS.

There are two steamship lines engaged in carrying emigrants from this port to the United States—the Anchor Line and the Allan Line. The old State Line has been consolidated with the Allan Line, so that now both lines are under one management. The Anchor Line carries cabin, second-class, and steerage passengers, and sends a vessel once a week to New York. On their best boats, like the *City of Rome* and the *Furnessia*, they carry few, if any, continental emigrants. The steerages of these vessels are clean and well ventilated. The last vessel that sailed was the *Circassia*. Her steerage had been newly painted, so everything was as neat as could be desired. The Allan Line sends a ship once a week to New York and one every fortnight to Boston. Their vessels are all cattle boats, and carry only second-class and steerage passengers. These vessels are clean and well ventilated. Once every other week a cattle boat of this line leaves this port for Philadelphia. She does not carry any passengers from here, but she stops at Liverpool and takes passengers from there to St. Johns and Halifax. There are only two vessels of the old State Line running at present—the *State of California* and the *State of Nebraska*. They make a trip to New York and return every five weeks. The week that they sail they take the place of the cattle boat. They are fitted up for first-class passengers, as well as for second-class and steerage passengers. Only two vessels belonging to other lines left this city for the United States during the time embraced in this report. The steamship *Prodano*, belonging to Donaldson Bros., sailed without cargo July 19 for Baltimore, and the bark *Gler* sailed in ballast for Savannah, Ga. The average number of vessels each week for the three weeks is 3⅓

CHARACTER, NATIONALITY, AND NUMBER OF EMIGRANTS.

One thousand four hundred and fourteen emigrants left this city for the United States between July 10 and July 31, 1893, of which 564 went by the Anchor Line steamships and 850 by the Allan Line. Mr. John Aitchison kindly furnished me the following table of the steerage passengers on the vessels of the Anchor Line:

Nationality.	Anchoria.	Circassia.
Russians	149	91
British	147	71
Italians	7	15
Hungarians	14	12
Germans	12	9
Austrians	9	
Scandinavians	4	24
Total	342	222

I requested the Allan Line to give me the same data, but they replied they kept no record of their steerage passengers, and were therefore unable to tell me their nationality. The proportion of continental emigrants carried by them is, however, much greater than shown in the above table. Most of these foreigners are Jews. They are a dark, swarthy race, with long, black, unkempt hair. The clothes they have on are invariably old and dirty, and the people themselves are never clean, not even their hands and faces. Many of these Jews will not eat food prepared by Christians. If they can not get their own food on the ship they will starve themselves, or eat so little as to make themselves liable to infection from the germs of any disease with which they may come in contact. They bring unleaven bread with them, mixed up with their clothes in their baggage. When the baggage was disinfected all the food found amongst the clothing was destroyed. The Allan Line in one of their houses has a special kitchen for the Jews, and a Christian is not even allowed to enter the room. When I was inspecting the house the boarding-house keeper permitted me to go in as a special favor.

The British emigrants are desirable people to have in the United States. They are as a rule clean and healthy, and should make good citizens. Most of them go as second-cabin passengers to avoid the trouble of passing through the immigration office in New York, and also to keep from mixing with the continental emigrants on the steamer.

DISINFECTION OF BAGGAGE.

A copy of the letter sent by the U. S. consul to the steamship companies in regard to the disinfection of baggage by steam has already been inserted in the beginning of this report. The first vessel to come under this order was the steamship *Circassia*. The following letter shows what difficulties were encountered in disinfecting the baggage of these emigrants by steam.

"UNITED STATES CONSULATE,
"*Glasgow, Scotland, July 29, 1893.*

"*To the Supervising Surgeon-General, United States Marine-Hospital Service, Washington, D. C.:*

"SIR: I have the honor to transmit herewith the following report upon the disinfection of baggage and other matters connected with the embarkation of emigrants at this port for the United States during the week ending July 29, 1893:

"The steamship *Scandinavian*, of the Allan Line, sailed for Boston July 26. She had 79 steerage passengers, only 15 of whom were from the Continent. These 15 were Scandinavians, and as they had not been in Gothenburg I did not require their baggage to be disinfected.

"The next vessel to sail was the steamship *Circassia*, of the Anchor Line. She left for New York July 27, with 222 steerage passengers. The baggage of the continental emigrants on this steamer was disinfected by steam in the hold of one of the 'tenders' of the company. The company had applied to the sanitary department of the city for the use of the steam disinfector of the Belvidere Hospital, but the department had declined to allow them to use it. The clothing was taken out of the boxes, trunks, satchels, etc., and spread upon lines stretched across the vessel's compartment. I required all baggage to be unpacked and disinfected, as I found that it would be very difficult to draw the line between heavy baggage and hand baggage, as the containers were all shapes and sizes. I am of the opinion that the hand baggage should be treated the same as the other baggage, as the continental emigrants from this port are mostly Russians and Polish Jews, and only a few Scandinavians and Germans. Frequently the clothes in the satchels will be very dirty, and mixed up indiscriminately with bread and other eatables. In all cases where bread, etc., was thus found I had it thrown out. The containers and all things not disinfected by steam were treated with a solution of bichloride of mercury 1-800. I informed the interpreter that leather and rubber goods and furs would be injured by steam, and told him to tell the emigrants not to place such articles upon the lines. Whenever I saw anything that would be destroyed by steam I had the emigrant replace it in his trunk, where it was afterwards washed in the bichloride solution. A couple of leather jackets, however, were accidentally left in the compartment, and were of course permanently injured. When everything was ready, steam was turned into the compartment and the temperature raised to 216° F., and that temperature was maintained for half an hour. There was no way for telling the pressure of the steam, but it was estimated to be about 16 pounds to the square inch. Upon opening the compartment it was found that a number of the colored patterns on some of the fabrics had "run," and the coloring matter had stained the white goods. There was also a number of rust spots on the clothing from the water dripping from the roof. These spots and stains can be removed by proper treatment, so nothing was permanently injured except the leather jackets mentioned above. I assumed none of the responsibility for any damage that might be done by this disinfection, but simply acted as inspector to see if it was performed in accordance with the regulations of the Secretary of the Treasury. * * * The next morning the agent of the Anchor Line ascertained that there was a steam chamber in connection with the Great Western Laundry of this city. Arrangements were made and the baggage that arrived that morning was disinfected in that chamber. I visited the laundry and the steaming was done under my inspection. This steam chamber is efficient, as the engineer is able to get almost any temperature and pressure that is desired, the only objection to it being that the whole of the apparatus is in one room.

"The next vessel to sail was the Allan Line steamship *State of California*, which left for New York July 28 with 295 steerage passengers. The day before the agents of the Allan Line tried to induce me to give this vessel a bill of health without requiring the steam disinfection of the baggage of the continental steerage passengers. I told them that it would be impossible for me to do this. They then asked me to send them a letter stating this fact, which I did. I inclose a copy of the letter I sent them. The disinfection was done that evening under my inspection in the steam disinfector of the sanitary department of the district of Govan, Glasgow, and was very satifactory. The family, with the two children convalescent from smallpox, of which I wrote you last week, were allowed to embark upon this vessel, as they had so far recovered that I did not consider them a source of infection to the ship. The children were washed in a weak solution of bichloride of mercury, and their clothes were boiled. The family did not have any baggage, not even a hand satchel. The certificate from Germany was sent along with them. * * *

"Very respectfully,

"WM. G. STIMPSON,
"*Assistant Surgeon, Marine-Hospital Service.*

["NOTE.—I have subsequently ascertained that the agents of the Anchor Line made a second application for the use of the disinfector of the Belvidere Hospital, and the sanitary department of the city finally consented to allow them to use it on this occasion. The company preferred, however, for some reason of their own, to use their own 'tender' after all. If I had known at the time that they had obtained permission to use this steam disinfector, I would have strongly advised, if not insisted, upon their doing so, as the disinfection in such a chamber is much more thoroughly and satisfactorily performed."]

"UNITED STATES CONSULATE,
"*Glasgow, Scotland, July 27, 1893.*

"GENTLEMEN: I have the honor to state that I shall have to insist upon the disinfection by steam of the baggage of the continental emigrants which take passage for New York on the steamship *State of California* to-morrow. If there are any continental emigrants on the steamer whose baggage has not been disinfected by steam I shall be forced to refuse to give the vessel a bill of health.

"Yours, respectfully,

"WM. G. STIMPSON,
"*Assistant Surgeon Marine-Hospital Service.*

"Messrs. JAMES & ALEXANDER ALLAN, *Glasgow.*"

CHARACTER OF MERCHANDISE.

The cargoes of the vessels that left this port for the United States during the month of July consisted of general merchandise from the British Isles. The character of the goods is shown by the following list: Dry goods, carpets, machinery, building stones, tiles, bricks, coal, chemicals, herrings, whale oil, whisky, rum, bibles, books, old ropes, waste paper, fishing tackle, claymores, etc. The waste paper was accompanied by consular certificate stating that it had been collected in Scotland.

Statement of the number of vessels inspected from July 10 to 31.

Destination:	
New York	5
Philadelphia	2
Baltimore	1
Savannah	1
Boston	1
Total	10

Number of passengers inspected:	
First cabin	169
Second cabin	370
Steerage	1,414
Cargo:	
General	8
Ballast	2

Remarks.—Baggage of continental emigrants on 3 vessels were disinfected by sulphur and on 2 vessels by steam. Other vessels carried no continental emigrants.

CONCLUSION.

The continental emigrants that pass through this city on their way to America come from the lowest classes of Europe and, as I have stated in my letters to the Bureau, are most undesirable people to have in the United States.

Great numbers of Jews are now emigrating to the United States. Some of them do not come direct from the Continent, but stop in this country for a time and then continue their journey to the west, in which case their last residence is given on the emigration sheet as some place in Great Britain. The Scandinavians, British, and Scotch emigrants go mostly to the thinly settled parts of the United States, where they are needed, and they soon become good and useful citizens, but the Jews go to the large cities and towns, which are now overcrowded and in which there are already too many of the poor and unemployed.

If there is no way of preventing the admission of undesirable immigrants into the United States, I should recommend that the medical inspection at this port be made a permanency. I should also recommend that the baggage of the continental emigrants be disinfected by steam, whether suspected of being infected with cholera or not, as there is no telling what diseases these emigrants may bring with them in their clothing; and also that the steamship companies be required to carry out the following provisions:

1. All emigrants must arrive in this city at least two days before the ship's departure, when cholera is suspected the emigrant being detained the usual five days.
2. All emigrants should be given a bath and their body clothing washed, and disinfected if necessary.
3. Steam disinfectors should be erected near the emigrant houses, on the wharf, or at some other convenient place.
4. Emigrant houses should be under the inspection of the medical officer, and the companies be required to carry out all his instructions in regard to cleanliness of the emigrants and of the houses.
5. The emigrant houses should be separated into compartments, so that those arriving on one day can be kept apart from those coming at a later date.

Very respectfully,

Wm. G. Stimpson,
Assistant Surgeon, Marine-Hospital Service.

Report of Assistant Surg. B. W. Brown, detailed for duty at Genoa, Italy.

Genoa, Italy, *August 23, 1893.*

To the Surgeon-General U. S. Marine-Hospital Service, Washington, D. C.:

Sir: In compliance with Department letter dated July 6, 1893, directing me to prepare a report of my work at this port from the date of arrival to July 31, I have the honor to submit the following facts pertaining to the enforcement of the quarantine regulations of February 24, 1893, at the port of Genoa:

I arrived in Genoa April 5, 1893, and after consulting with the consul I published the following notice for three days in the leading newspapers:

"NOTICE.—In accordance with the new quarantine law of the United States of America, dated February 15, 1893, all agents of steamers and sailing vessels bound to that country are requested to notify the medical inspector, at the U. S. consulate, before any merchandise or passengers are taken on board."

I also had printed the following circular, which I distributed to the principal shippers:

"CIRCULAR.—Forwarding merchants and exporters sending goods to any part of the United States of America are hereby informed that from this date the new quarantine law is enforced, and that in compliance with the same the following rules must be strictly observed. This consulate must be informed of all vessels about to load for ports in the United States so that the ship may be inspected and disinfected if necessary before taking on cargo. The consulate must also be notified seventy-two hours previous to the date of sailing of any vessel, and the port of destination to which she is bound in the United States given.

"The goods intended to be shipped to the United States are divided into three classes:

"*Class A.*—All new and dry textiles (woolen, cotton, or linen), musical and scientific instruments, new furniture, ales, wines, liquors, live animals, cane and rattan ware, books and printed matter, china, glass, porcelain, precious stones and jewelry, fancy goods, toys, art goods, grains, plants and seeds, india and hard rubber, ivory, leather and leather goods, manure salt and kainit, metal, metal goods and hardware, explosives, Portland cement, salt, silk, tobacco and cigars, and such others as may be added hereto from time to time by the medical inspector of the U. S. Government. This class applies only to absolutely new goods. These goods require neither inspection nor disinfection provided they are properly cased in order to prevent moisture incident to shipment.

"*Class B.*—Sugar of all kinds, coffee, bristles, feathers if new, horse and other animal hair, unmanufactured wool, dextrin, dried fruits and vegetables, eggs and albumen, fresh fruits, moss rags, jute, gunny, raw hides and skins, rennets, guts and bladders, wood pulp and cellulose. All second-hand goods without exception and all others not included in Class A or Class C.

"These goods are always subject to inspection or disinfection, and they must be listed three or four days prior to sailing, in order that no delay may be caused to the shipper or to the vessel.

"*Class C.*—Second-hand goods, such as upholstered furniture, feather beds, down quilts, clothing, except such as may be personal wearing apparel accompanying owner. These articles are entirely forbidden entry into the United States during the time of infectious or contagious disease existing in Europe. The disinfection when required will be done in a manner not to injure the articles, and the certificate of disinfection must be authenticated by the U. S. consul.

"JAMES FLETCHER, *U. S. Consul.*
"B. W. BROWN,
"*Assistant Surgeon, M. H. S., Medical Inspector.*

"GENOA, *April, 1893.*"

The above circular is a copy of the one issued by Passed Assistant Surg. White, at Hamburg.

DESCRIPTION OF GENOA.

The population of Genoa for 1892 was 211,943, with a death rate of 2.55 per 1,000. There are three separate sources of water supply, obtained from mountain streams 15 miles from the city, along the banks of which are many small villages. Two of the aqueducts are of iron and the other of brick, and all three are covered. The water is analyzed twice per month. The sewer system consists of large brick conduits into which both sewage and storm water enter. Most of the manholes are furnished with automatic valves to prevent exhalations. The main sewer empties into the sea outside of the harbor, but the smaller ones near the city front. The water-closet is a relic of the Dark Ages; flush pipe connected directly with principal water pipe. There are seven hospitals and one medical school. The San Andrea Apostolo is said to be one of the finest hospitals in Europe. Health matters are controlled by the municipal sanitary officer, and as far as I have observed he does his work well. The streets are washed every night and sewers flushed. When possible, cases of contagious disease are removed to the lazaretto, and rooms disinfected with bichloride of mercury, carbolic acid, and sulphur, clothing and bedding steamed or burned. All vessels from suspicious ports are detained twenty-four hours and disinfected, and dirty baggage steamed. For this purpose the city has a small steamer, provided with two disinfecting boilers. I was informed by the health officer that three lazarettos and three observation houses had been prepared, in case of cholera this summer, and besides this, a large tract of land outside of the city had been secured for an isolation camp. Rigorous disinfection and isolation will be enforced in case of an outbreak. The last cholera epidemics occurred in 1884 and 1886. In 1884 the infection was thought to have been due to contamination of the aqueduct from the Scrivia River, as there were cases of cholera in the villages along its banks. After this supply of water was shut off from the city the epidemic immediately ceased.

The epidemic of 1886 was probably due to the importation of personal effects. From an examination of health reports for the past year, it appears that Genoa is never entirely free from smallpox, a few cases being recorded nearly every month. There is also more or less typhoid fever throughout the year.

DESCRIPTION OF VESSELS.

The only line handling emigrants at this port is the North German Lloyd Steamship Company, which usually runs two steamers per month. Most of the cotton waste and jute, mentioned under merchandise, are shipped in sailing vessels. There are also a number of tramp steamers leaving for the United States, but they generally go in ballast; for this purpose I require them to take solid rock or water; formerly they were in the habit of taking the town rubbish for ballast. My method of dealing with the ships is to require agents to report to me when cargo has been removed. I then see that the vessel is clean, and examine log book as to health during previous voyage. I inspect the vessel again the day of sailing, at which inspection I see all of the crew and have those vaccinated who can not show a satisfactory scar. So far it has not been necessary for me to disinfect any vessels. All captains and agents are impressed with the necessity of keeping water tanks clean. Thirty-two vessels were examined from April 5 to July 31.

EMIGRANTS.

Genoa is one of the chief European shipping ports for South America, and every month about 8,000 to 10,000 emigrants leave for that country. These people arrive two or three days before the vessel sails, and lodge in the common boarding houses or sleep on the streets. There are no special hotels for emigrants, and the authorities, apparently, take no interest in them further than to see that they have the proper passports. The day of sailing they are examined by the police authorities, and all children are vaccinated by the port surgeon. These people come principally from Italy and Sicily.

The emigrants bound for the United States are, for the most part, from northern Italy. There are usually some Austrians and a few Turks. They are much cleaner and more respectable in every way than southern Italians. Those from noninfected localities arrive in Genoa two or three days before the departure of the steamer, and most of them stop at respectable boarding houses. Their baggage is fumigated by sulphur, according to method described under baggage. On the morning of sailing they collect in the reception room of the passenger depot and pass, one by one, before the chief of police, the surgeon of the port, and the ship's surgeon. After passing through this ordeal they come into my hands. I stand at the gangway and have a view of them from the time they leave the police office, 50 feet away, until they reach the ship. I examine them carefully, and if I pass them the emigrant agent stamps their cards with my seal. All first and second class passengers are also examined as they come on board.

Steerage passengers from infected localities are required to be in Genoa five days before sailing of vessel and are examined by me the day they arrive, and at least two additional examinations are given them before day of sailing.

All baggage is steamed according to method given under baggage. Since April 5 I have examined 4,895 emigrants. The above method of dealing with emigrants was carried out up to July 31. Since then, on account of cholera in various parts of Italy, five days' isolation of emigrants and steam disinfection of all steerage baggage has been required.

BAGGAGE.

All baggage belonging to emigrants from noninfected localities is opened, the contents spread on racks, and, together with trunks, exposed to sulphur (4 pounds to 1,000 cubic feet air space) for twelve hours. This method was adopted on account of the prevalence of measles, scarlet fever, and diphtheria in Genoa and other cities of northern Italy. The fumigation is conducted in two air-tight lighters. All bedding is rejected. The baggage of those from infected towns is subjected to live steam at a temperature above 102° C. for half an hour, and then dried. Leather goods are soaked in a 4 per cent solution of carbolic acid, and trunks washed inside and out with the same solution. The steam disinfecting plant used by the North German Lloyd Company consists of an iron boiler 15 by 6 feet, placed on a barge. It is provided with a movable iron rack on which to spread the clothing, and the pipes are so constructed that either live steam or dry heat can be used. The steam is obtained from the steamer alongside by means of an iron pipe.

MERCHANDISE.

The merchandise from this port consists of general cargoes of marble, olive oil, wines, lemons, preserved fruits, and fish, sausage, etc.; also large quantities of jute bagging and cotton waste. On my arrival I thoroughly inspected the mills where this cotton waste and jute bound for the United States are cleaned and packed. The material is first cleaned in boiling water, then put into large iron cylinders and subjected to steam under high pressure, after which it is transferred to the drying room and thoroughly dried and packed in clean bagging. Of course the above process guarantees absolute disinfection. The next important cargo is pumice stone, which is quarried in Sicily, shipped in bulk to Genoa, and packed in new bags from the above-mentioned mills.

Large quantities of cheese and macaroni are also shipped from here, and occasionally cargoes of coffee, hides, and gums come to this port for reshipment to the United States. All merchandise requiring disinfection is fumigated with sulphur (4 pounds to 1,000 cubic feet of air space) for twelve hours, or subjected to steam. I require consular certificates to accompany invoices of food products and personal effects. All food products from suspicious localities are rejected.

In conclusion I have the honor to submit the following suggestions in regard to sanitary work in Europe.

Steam disinfection of emigrants' baggage should be kept up at all European ports during the coming winter, for clothing belonging to cholera-stricken relatives will certainly be carried to America. Italian peasants save everything.

This work, to be done thoroughly, must be performed by an American medical officer. Consuls, even if otherwise fitted for the work, are not able to devote the necessary time to it, and foreign medical officers can not be relied upon.

Emigrants should only be shipped from such ports where steamship companies are willing to provide all necessary means for carrying out the quarantine regulations of February 24, 1893.

No emigrant should be allowed to land unless his baggage has been disinfected and stamped by an American medical officer.

All second-class passengers embarking from an infected port should be isolated for five days and their baggage steamed. The danger from this class is almost as great as from the steerage.

There should be an experienced officer centrally located, to whom all European consuls should report, by telegraph, any cases of cholera in their districts. Each port could then be notified at once of dangerous localities. Said officer should also inspect stations frequently, and be ready to give advice on the many difficult questions which are constantly arising.

I am glad to be able to report that I have had no trouble with consuls, Italian authorities, or steamship agents; and I wish to take this opportunity to thank Mr. Fletcher, U. S. consul at Genoa, for his valuable assistance in my work.

Very respectfully,

B. W. BROWN,
Assistant Surgeon, Marine-Hospital Service.

REPORT OF ASSISTANT SURG. E. R. HOUGHTON, DETAILED FOR DUTY AT HAVRE, FRANCE.

To the Surgeon-General U. S. Marine-Hospital Service, Washington, D. C.:

SIR: In accordance with instructions, I have the honor to transmit the following report of transactions from April 1 to July 31, 1893:

On reaching Havre, the morning of April 1, 1893, I at once called on Mr. Oscar F. Williams, then consul of the United States, and presented my orders. He received me very kindly, but stated at once that he was very much embarrassed by lack of orders from the State Department. He informed me that his letter simply mentioned the fact that a Marine-Hospital officer had been detailed for duty in the consulate in connection with the law of February 15, 1893, and asked him to show such courtesy as he judged necessary. But he had no orders to give me either office room or desk. As the vice-consul's desk was not in use at that time, he politely offered me the use of it, and also any assistance that I might need from him or the clerk. He ordered all books, stationery, and records needed, thereby relieving me of considerable annoyance, but he warned me that his successor had been appointed and might relieve him at any moment.

The first boat inspected according to the new law was the *Rugia*, from Hamburg for New York. I had no bills of health as yet, so after inspection of boat, food, crew, and passengers from Havre, I signed the bill of health given by the consul. This gave rise to the first difficulty—who should sign the bill of health? Consul Williams stated that his instructions as consul were to give a bill of health to all vessels going to the United States, and that those instructions were still in force, there being no repealing clause in the new law. Again, the bill of health sent from the Department of State read, "Consular bill of health," and had a space for both consul and medical officer. Thirdly, to collect the official fee he must sign and seal the bill or else fee could not be legally collected. The result of this was a compromise, and both signed the bills.

Saturday, April 8, at 5 a. m., Mr. Williams and I went to examine the ship, crew, cargo, and passengers of the steamship *La Champagne*, of the Company General Transatlantic. Mr. Williams presented me to the officers of the company and the ship, and also to Dr. Gibert, then director of health. The ship was found remarkably clean, the crew were well, the cargo was new merchandise, well packed, and the passengers were all passed. This examination was a severe ordeal. The officers of the company, the health authorities, and their friends stood off one side in a group and watched me closely. I stood at the foot of the gangway and had the emigrants approach one by one. The head, eyes, throat, cervical glands, and chest of each emigrant were inspected rapidly but thoroughly, and then if passed he was counted by a man stationed at the gang plank. As to first and second class passengers, every possible attempt was made to obtain an accurate count, but it was and has been impossible, owing to the numbers of friends who go aboard to see the voyagers off. Special tickets were used, men were hired, the consul and myself inspected and counted, we made every passenger show his ticket, and then passed his friends with him, but all in vain. Our totals never agreed. The company then tried to help us, but also failed. On the day of sailing passengers and friends come as early as 5 a. m., even when the hour for sailing is noon. Another year I would recommend that steamship companies sell tickets with a medical coupon attached, giving the class and residence for last five days, which coupon could be detached by surgeon and an exact count obtained.

I began my official calls by going to see Dr. Gibert, physician in charge of epidemics and the then director of health.

He was very courteous, and said that he approved of our method of emigrant inspection, but he had protested to his Government against my presence for the following reasons:

That the law of February 15, 1893, had not been sent to the French Government before it took effect;

That the law was against international agreement and courtesy, the United States having no right to make a law taking effect on French soil;

That no permission had been granted to French surgeons to examine ships in United States ports bound for France;

That the medical officer practically superseded the French authorities by giving bills of health after ship and passenger inspection;

And finally, that the medical officer was not properly accredited to the French Government, nor had any request been made that he should be received.

Two plans of action were before me, either to refuse bills of health until the authorities were compelled by commercial interests to allow me to perform my duties, or to come to some amicable arrangement by which my work could be done without giving offense to the officials who felt superseded. I chose the latter course, and a fairly satisfactory plan was adopted. The question of official recognition I did not press, being satisfied at being allowed to do my work unhindered. Recognition I felt sure would come later.

After my visit to Dr. Gibert, Mr. Williams, at my request, wrote official letters to the steamship companies, to the mayor, the chamber of commerce, the sous-préfet, and others in authority, announcing my arrival and my desire to be present at the examination of ships and emigrants leaving Havre for the United States. In addition, a copy of the law was sent to Minister Coolidge at Paris, requesting that he would announce my arrival and request permission for me to assist at all examinations.

Replies were received from all, inviting me to assist, except from the sous-préfet, who represents the French Government at Havre. I again called on Dr. Gibert at his office to ask the reason, and to tell him that unless I was allowed to examine ships, crews, cargoes, and passengers, and issue a bill of health, the ships would be subject to a fine on reaching the United States. He received me very courteously and asked me to go home and lunch with him as he was too busy to give me any other time. Without any questioning on my part, he told me at once it was understood by all the authorities that the medical officer should go right on with his work until the answer to his protest was received from Paris through the sous-préfet. He considered this new idea of emigrant inspection and quarantine at point of departure to be very wise indeed and could not fail to meet the approval of the steamship companies; said it reduced to a minimum the dangers of infecting the ships and of subsequent quarantine at United States ports. But he still objected vigorously to the manner of putting the law into effect and of sending quarantine officers to France unannounced.

On the 27th of April I called on the mayor of Havre, and later, with Dr. Gibert and Consul Williams, we visited the hospitals, because a rumor had been circulated to the effect that two deaths from Asiatic cholera had occurred, two other cases still being under treatment at the hospital. After our visit, which proved the falsity of the rumor, the mayor gave me permission to visit the hospitals at any time. Dr. Gibert introduced me to the head clerk of the bureau of hygiene and ordered him to allow me to see the records if I desired, and to give me any information concerning epidemics in possession of the bureau whenever I asked for it.

Both Dr. Gibert and Mayor Brindeau asked me to kindly defer sending any cablegrams to Washington concerning suspected cases of cholera at Havre until I had seen and diagnosed the case myself. I could not refuse to give assent to so reasonable a request.

On the 1st of May the sous-préfet called on me and handed me a letter in response to the one addressed to him by Mr. Williams in my behalf, giving the decision of the French Government as to the medical officer's position.

[Translation of letter of the sous-préfet.]

"FRENCH REPUBLIC.

"SOUS-PRÉFECTURE OF HAVRE.
"OFFICE OF THE SOUS-PRÉFET,
"*Havre, May 1, 1893.*

"SIR: You wish, in announcing to me by your letter of April 12 the arrival at Havre of Dr. E. R. Houghton, surgeon of the Marine-Hospital Service of the United States, to express in his name the desire to assist at the medical visits held by the doctors of the town, of the port, and of the steamship companies.

"I have the honor to inform you that the administration of France consents to give to the doctor attached to the consulate of the United States the authority to accompany the delegates of the French Sanitary Administration and of the Emigration Service when these visits are made in view of the departure of French or foreign ships from Havre for a port in the United States.

"With distinguished consideration,

"THE SOUS-PRÉFET,
"*Lardin de Musset.*

"To the CONSUL OF THE UNITED STATES."

After handing me the letter, Mr. de Musset, the sous-préfet, invited me to meet Mr. Hendley, the préfet, at 10 o'clock, May 5, to arrange some minor details.

At the appointed time a meeting was held at the sous-préfecture. The préfet, the sous-préfet, and Dr. Gibert were present. The préfet stated that Dr. Gibert's protest had first called the attention of the French Government to the new law, and consequently the general objection to the American officer operating on French soil had resulted in another protest, which had reached the ambassador in Washington about the 22d of April.

Pending a decision, the French Government had decided, in the interests of commerce, to grant my request to assist at all inspections of ships, etc., bound for the United States. Since the local sanitary law requires the examination of vessels during an epidemic only, Dr. Gibert's presence at an inspection might give rise to an unfounded suspicion. So Dr. Fauvel was temporarily appointed to assist Mr. Nicolle, commissioner of emigration, and a cordial invitation was given me to be present and to make any suggestion or recommendations that seemed to me necessary.

To assure himself that all was going well, the sous-préfet was present at 5.30 a. m. the following Saturday at the examination of ship, crew, and emigrants. To quote from my letter to the Marine-Hospital Bureau, May 6: "After all were inspected, Mr. Nicolle (commissioner of emigration) and Mr. de Gaalon (principal agent Transatlantic Company) both requested Mr. de Musset to report to his Government that they had visited the ship, crew, and third-class passengers with me, and that they were satisfied that my assistance at the examinations was entirely agreeable and acceptable; that it was of benefit to the steamship company, and that there was no further objection to my presence." Since then the medical officer has met with no opposition and everything has worked harmoniously.

The arrival of the newly appointed consul, about the 1st of May, reopened the questions of jurisdiction and duties. After several frank discussions on the subject the decision was reached that the consul would write to the State Department for a definite statement of his duties and for information as to who should sign bills of health, and whether, having been assigned to duty in the consulate, the medical officer should report to the consul or not. Pending the decision of the State and Treasury Departments the medical officer took charge of sanitary and medical matters, with the understanding that as long as he was in the consulate the consul should be kept informed of his decisions and acts, and in cases of great importance be consulted. Under this temporary arrangement everything progressed smoothly, but as yet (July 31) no definite reply has been received.

The sanitary condition of the port of Havre is good, and has been so since my arrival, owing to the efforts of the bureau of hygiene for the town and those of the director of health for the port itself.

The director of the public health is appointed by the minister of the interior, to whom he makes his reports. He has charge of the port, shipping, bills of health, etc. The methods in force for preventing the entrance of disease by ships are as follows: On entering the port the ship is met by a health officer, and a number of questions asked as to sickness, sanitary condition, etc., and the bill of health is examined. This is called "reconnaissance par questions orales" (recognition by oral questions). Then a blank form is filled out by captain and pilot, which calls for about the same information. This constitutes the "Arraisonement par interrogataire imprimé (reasoning by printed questions). If the answers are satisfactory the boat is passed. If not, then comes the "visite medicale." The boat enters the basin, but anchors in quarantine ground. The inspection is made by the health doctor for the General Government and by the captain of the health for the town. If there are no sick aboard the officers proceed to what is called "simple disinfection," which is the disinfection of all the linen and clothes of the crew by steam. When, however, sickness of a contagious character is found aboard the patients are taken ashore and put in a reception hospital and everything is disinfected, including the ship. This is called "désinfection générale." After being the required number of days in quarantine the ship is released if no new cases have developed.

When the vessel has no sick aboard, but comes from an infected port, it is tied up to the quarantine dock and put under surveillance. A "garde sanitaire" is put in charge, and it consists of a brigadier, called inspector of salubrity, who is from the city but under orders of the director of health, and a guardian of the peace. No one is allowed to come ashore, except the captain and chief engineer, until the required time is up.

The director of health is allowed unlimited power in a case of emergency. He can order a boat out to sea to anchor, can disinfect in any way he chooses, and for any length of time, but after taking action he must report to the minister of the interior what he has done and the reasons therefor. His power would be unlimited were it not kept in check by the comparatively small amount of money allowed him.

CHARACTER OF VESSELS SAILING FROM HAVRE AND THE AVERAGE NUMBER EACH WEEK.

The ships leaving this port for the United States are classified as follows: (1) those engaged in passenger and freight trade; (2) those engaged in freight trade only; (3) petroleum steamers; (4) sailing vessels.

The lines carrying passengers are the Company General Transatlantic, which sends out one boat to New York every Saturday, carrying from 400 to 800 passengers of all classes and a crew of 230, except the *Touraine*, which carries a crew of 300. The Hamburg-American Packet Company advertises sailings from Havre every Tuesday, but they average one boat in two weeks. As a rule, only emigrants and freight are taken from here. From 50 to 200 emigrants are taken in addition to those taken at Hamburg. They also send freighters to New Orleans.

The Companie Commerciale de Transport sends one boat a month to New Orleans via Antwerp and Bordeaux. Only freight is taken from here.

The freighters have no regular trips, being chartered for a voyage when a cargo is collected.

The petroleum boats bring petroleum to Havre and return to Philadelphia in water ballast.

The sailing vessels have no regular sailings, and are chartered for the voyage only.

The average number of vessels from Havre each week for the period from April 1 to July 31 is about three a week, the majority being freighters and sailing vessels.

The measures necessary to enforce a compliance with the regulations were very simple. The requirements were carefully explained to steamship companies and to shipping brokers, and in most cases these were promptly observed. The British tank steamer *Oriflamme* was the first to disobey. Her captain, through his broker, refused to take a bill of health, saying that he was going to Dartmouth to coal up and he could get his bill there. He was informed of the new law and the penalty attached to an infringement, but he replied that he would save the $2.50 and go without the bill of health. As soon as it was ascertained that the *Oriflamme* had sailed the Marine Hospital Bureau was notified, and a penalty was imposed according to the law as soon as the ship reached Philadelphia. This action was soon known to all the ship captains and brokers at Havre, and no more trouble has been experienced in that direction.

The captain of the French steamer *Le Havre*, bound for New Orleans from Havre via Antwerp, was the first to object to an inspection, and it was only after being warned that he could get no bill of health that he became reasonable and allowed the inspection. I sent a complaint to his company (Companie Commerciale), informing them that I should refuse to go aboard any of its steamers until they had instructed their officers to be at least decently civil. The vice-president of the company called the same day and made profuse apologies, and offered to replace the captain as soon as the boat reached Antwerp. I replied that a lesson in politeness would undoubtedly be sufficient, and, judging from the politeness and courtesy shown me by the captain of *Le Lion* on the occasion of my next visit, I think the lesson was well learned and its influence extended to the other boats of this line.

Some difficulty has been experienced with freight boats and sailing vessels. The crews are discharged as soon as these boats reach port, and are not shipped again until the last hour before sailing. As a result the forecastles are almost invariably in filthy condition, and cleanliness has only been obtained by refusing to give a bill of health until all was cleaned. This task, with a drunken crew brought aboard at the last moment by the police and trying in every way to escape, is sometimes almost impossible; so that now some two or three men are shipped a day sooner to clean, paint, and scrape, so that the boats are fairly clean on departure. Still, the cleanliness does not last long after the crew comes aboard, so some captains have adopted the plan of nailing up the closets and even the forecastle until after the doctor's visit. If it were not for the short time allowed at high tide for ships to leave and enter the port the loss of money consequent upon waiting over a tide, and the almost impossible task, even with police aid, of keeping the crew aboard the boat twelve hours, some better system might be insisted on; but as it is the present imperfect system demands that the ships be clean at doctor's visit anyhow, whatever it may be five minutes after.

The character of the emigrants varied with the different localities from which they came. The Swiss and the French were, as a rule, about the same as the average second-class passengers. They were clean and well dressed, all of them had money, and their trunks were large and well stocked with new garments and linens. The Germans from near the border of France and Switzerland are also a very desirable class, being very strong and healthy, and in possession of money and outfits. Nearly all, if not all, of these four nationalities are able to read and write. The south Germans and Austrians are about on a par, but are not apt to be as well educated as either Swiss or French. The Italians were all in good health, and dirty. In their trunks cheeses and pantaloons, enormous sausages and hobnailed boots were packed in regardless of consequences, so that in opening the trunks for inspection the question was simply one of what not to reject. One Italian, finding his trunk half empty after packing all his effects, filled the other half with dirt, his explanation being that he was taking Italy to America with him. Another man had nothing in his trunk but a hat, a pair of shoes, and an olive tree. The Greeks and Roumanians are about the same as the Italians. The Syrians, Armenians, and Arabs were the poorest and least desirable of all the emigrants who passed through Havre.

The bulk of the emigration is from Italy, Switzerland, France, and Germany, including Alsace-Lorraine. The list is as follows:

Italy, 2,550.
Switzerland, 1,575.
Alsace-Lorraine, 775.
France, 750.
Austria, 575.
Germany, 475.
Total, 7,807.

Greece, 300.
Turkey, 250.
Syria, 200.
U. S. A., 190.
Belgium, 51.
Armenia, 38.
Refused, 4.

Luxembourg, 19.
Roumania, 17.
England, 14.
Spain, 10.
Russia, 10.
Sweden, 8.

The methods of prevention of the conveyance of infection by emigrants are as follows: Care in sale of tickets; medical examination; baggage inspection. This for emigrants from noninfected districts. From infected localities third-class passengers undergo five days' detention, with daily supervision, all effects and baggage being disinfected.

1. The steamship companies notified their agents not to sell a ticket to anyone who might be refused admittance to the United States because of sickness or deformity; and added that any emigrant refused by the medical officer would be returned to his home at the expense of agent who sold the ticket. This accounts for the very small number rejected.

2. *Medical inspection.*—The emigrants are brought into a large room by twenties, where they are vaccinated and given cards. They then pass, one by one, before the emigration physician and the Marine-Hospital Service surgeon. The examination is the same as that described at the beginning of this report. In spite of its brevity, it gives us a pretty good idea of the emigrant's health. All doubtful cases are put one side and reexamined by all the doctors together. The thoroughness of this method is shown by the fact that not a single case of disease occurred on shipboard among the emigrants, and that not one was refused and returned from New York during the period covered by this report.

3. *Baggage inspection and disinfection.*—This consists of opening all or a great part of the trunks and rejecting foods, old and dirty bed clothing or feather beds, etc., as required by regulations. For the disinfection all effects are taken from the trunks and made into loose parcels and put into numbered sacks of large meshed material. These sacks are hung on racks in the patent steam chamber, and submitted to a heat of 117° C., with 7 pounds pressure. Every ten minutes the steam is turned off and the temperature allowed to fall to 100° C., after which it is again turned on. At the expiration of the required time the door of steam chamber is opened and the clothes are dried by means of the coil of steam pipes. On opening these sacks, after drying, the articles in the middle of sacks are too hot to handle.

4. Detention is almost unnecessary at Havre, as emigrants are not booked from infected districts. When necessary all the emigrants are put aboard a large steamer, which is moored in the quarantine grounds and serves as lazaretto. They are bathed the first day, their clothes being disinfected while they are in the bath. Then they are vaccinated. They are visited daily by the medical officer, who inspects their quarters and their food. Police officers prevent the passengers from coming ashore.

The merchandise shipped from this port belongs almost altogether to Class A, requiring neither inspection nor disinfection, and consisting principally of new merchandises, jewelry, clocks, wines, dress goods, etc. The only disinfection so far has been one consignment of hides, which was thoroughly sprayed with lysol and bichloride solution. Two-thirds of the shipment were accepted, one-third being returned from New York. They were reshipped by another line and were accepted.

List of principal articles of merchandise from Havre.

Coffee,
Grains,
Champagne,
Cheese,
Whisky,
Oils,
Porcelain,
Food stuffs,
Feathers,
Hats,
Skins,
Straws,
Silks,
Sardines,
Hardware,
Clocks
Tools,
Trimmings,
Paper,
Capsules,
Furniture,
Whalebones,
Embroidery,
Pictures,
Preserves,
Bonbons,
Laces,
Perfumes,
Extracts,
Chromos,
Books,
Bric-a-brac,
Flowers (artificial),
Bronzes,
Linens,
Ribbons,
Passementerie,
Tulles,
Fabrics,
Ironwork,
Brushes,
Shoes,
Blacking,
Paints,
Wines,
Cordials,
Hides,
Rugs,
Mineral waters,
Velvets,
Rubber,
Gloves,
Sponges.

Condensed statement, by months, of vessels inspected at Havre.

Date.	No.	Name of vessel.	Number crew.	Passengers.			Baggage—		Cargo.	Destination.
				First class.	Second class.	Third class.	Inspected.	Disinfected.		
Apr. 4	30	Rugia	97			84			General new merchandise	New York.
8	32	La Champagne	229	210		483			do	Do.
11	33	Wieland	98		3	206			do	Do.
15	34	La Touraine	307	298		401			do	Do.
18	35	Suevia	89			267			do	Do.
22	36	La Bretagne	224	287		557			do	Do.
25	37	Flandria	34						do	New Orleans.
29	38	La Gascogne[1]	229	140	71	533			do	New York.
29	39	Kenilworth	27						Ballast	Do.
		Total				2,531				
May 6	40	La Champagne	228	208		543			General new merchandise	Do.
13	41	La Touraine[1]	312	127	74	354			do	Do.
16	42	Rugia	97			250	270	All exteriorly	do	Do.
20	43	La Bretagne	230	117	63	475		do	do	Do.
20	44	Le Havre	42					do	do	New Orleans.
23	45	Wieland	98			177	350	do	do	New York.
27	46	La Bourgogne	233	118	50	418	600	do	do	Do.
29	47	Ascania	34						None for United States	New Orleans
		Total				2,217				
June 2	48	Sollingen	41			176	236		General new merchandise	New York.
3	49	La Champagne	227	120	60	273		All exteriorly	do	Do.
3	50	Edith Mary	9						Coffee and ballast	Do.
5	51	Le Lion	30						Water ballast	Philadelphia.
6	52	Russia				27	32	All exteriorly	Coffee, etc	New York.
8	53	Marseille	43						New merchandise	New Orleans.
10	54	La Touraine	307	114	81	379	285	All exteriorly	do	New York.
13	55	Dania	96		1		1	do	do	Do.
15	56	Alma	23						Water ballast	Baltimore.
17	57	La Bretagne	229	144	39	429	254	All exteriorly	General new merchandise	New York.
20	58	Cassius	11						None for United States	New Orleans.
24	59	La Bourgogne	232	130	54	329	429	All exteriorly	General new merchandise	New York.
24	60	Sirrah	10						Ballast	Savannah.
29	61	Markomania	23						General	New Orleans.
30	62	Henny	17						Ballast	Brunswick, Ga.
		Total				1,613				

[1] One passenger detained.

Condensed statement, by months, of vessels inspected at Havre—Continued.

Date.	No.	Name of vessel.	Number crew.	Passengers.			Baggage—		Cargo.	Destination.
				First class.	Second class.	Third class.	Inspected.	Disinfected.		
July 1	63	La Champagne	228	119	48	313	420		General, etc., new merchandise.	New York.
5	64	Bonita	11						Ballast	Wilmington, N.C.
8	65	La Touraine	306	160	61	345	457	7	General, etc., new merchandise.	New York.
12	66	Anna	10						Ballast	Wilmington, N.C.
15	67	Depuy de Lome	44						None from Havre	New Orleans.
15	68	La Bretagne	229	112	57	287	365	3	General, etc., new merchandise.	New York.
16	69	Wistow Hall	60						Ballast	Baltimore.
18	70	Valeria[1]								New Orleans.
19	71	L'Oriflamme	26						Water ballast	Philadelphia.
19	72	Nerito	28						Ballast	Baltimore.
19	73	Poseidon	16						do	Savannah.
22	74	La Bourgogne[2]	232	100	51	205	310		General, etc., new merchandise.	New York.
24	75	Sappho	10						Ballast	Wilmington, N.C.
29	76	La Champagne	228	96	68	296	411	3	General, etc., new merchandise.	New York.
30	77	Cheroskia[1]							Ballast	New Orleans.
		Total				1,446				

[1] Visé only given; no passengers nor cargo from Havre.

[2] Two passengers detained eight days.

As to suggestions, I would respectfully state that in spite of the opposition to nd protests made against allowing a foreign officer to do inspection duty on 'rench soil, the results have already, in four months, been such as to compel the ecognition of the fact that the practice of inspecting ships and passengers at port f departure is of positive value. The character of the emigrants has improved, ie ships, especially classes 2, 3, and 4. are very much cleaner, the food is better, nd more attention is paid to ventilation and ship sanitation. Based on these acts and the private statements of several officials here, my only suggestion rould be to invite foreign governments to send their quarantine officers to assist at iip inspection at American ports, and a cordial reception would meet any American officer sent to assist in foreign ports.

If foreign service is to be permanent, Passed Assistant Surg. Woodward's suggestions should be considered with a view to adoption, as they are practical and ounded on what experience abroad has shown us to be the needs of the service.

Very respectfully, yours,

E. R. HOUGHTON,
Assistant Surgeon, Marine-Hospital Service.

REPORT OF ASSISTANT SURG. M. J. ROSENAU, DETAILED FOR DUTY AT ANTWERP, BELGIUM.

TREASURY DEPARTMENT, MARINE-HOSPITAL SERVICE,
OFFICE OF THE UNITED STATES CONSULATE,
Antwerp, Belgium, September 1, 1893.

'o the Surgeon General U. S. Marine-Hospital Service, Washington, D. C.:

SIR: In obedience with your letter of July 6, 1893, I have the honor to make the ollowing report of operations at the port of Antwerp, Belgium, from April 4 to uly 31, 1893:

On assuming control of the sanitary matters here the following circular letter as addressed to the owners, agents, and ship brokers:

"CIRCULAR—NOTICE TO VESSEL OWNERS AND SHIPPERS.

"UNITED STATES CONSULATE,
"*Antwerp, April 5, 1893.*

To the masters, owners, and agents of vessels at the port of Antwerp, and others whom it may concern:

"SIR: Your attention is respectfully invited to the law enacted by the U. S. Govrnment February 15, 1893, and which is now in effect at this port.

"Any information concerning the new law and its regulations may be obtained the U S. consulate, Rue Everdy, 25.

"In order to facilitate the work prescribed by its regulations, you are requested report the time of departure of vessels sailing for the United States at the earest possible moment.

"Vessels prior to taking in cargo for any port in the United States are required be cleansed in all parts. The disinfection of vessels will only be required when nsidered necessary by the inspector, and as it is required that vessels be disinected when empty, you are requested to notify me of that fact so that the inspecon may be accomplished before the cargo is taken on board.

"GEO. F. LINCOLN, *U. S. Consul.*
"M. J. ROSENAU,
"*Assistant Surgeon, U. S. Marine-Hospital Service.*"

The principal passenger steamship company sent out the following circular to l its agents and subagents, in order to reach as far as possible the sources of the ils:

BAGGAGE.—IMPORTANT.

[Official circular—Translation.]

"ANTWERP, *April, 1893*

"In view of the recent quarantine laws enacted by the United States, passengers are notified not to carry baggage that may be regarded as suspicious by the American health authorities. By carrying such baggage they subject themselves to not only delay and the possible loss of passage, but to the injury of their property, without redress or compensation.

"Suspicious articles are: Bedding, including mattresses, blankets, and feather beds; also unwashed bed and personal clothing.

"It is hereby ordered that no bedding be taken as baggage; and furthermore, that no bed or personal clothing, sheets, pillowcases, or cotton or linen articles, be packed until they have been thoroughly washed.

"It is recommended that all effects be packed in trunks or chests secured with locks and easily opened, that damage and breakage in cases of disinfection against cholera may be prevented.

"Passengers are advised that they must have their baggage in Antwerp at least two days before the time fixed for departure if they desire to avoid the risk of being refused passage."

Some merchants and ship brokers responding with indifference to our requests concerning cargo, the following was addressed to them in order to explain more explicitly the meaning of the new law:

"CIRCULAR LETTER.

"UNITED STATES CONSULATE,
"*Antwerp, April 17, 1893.*

"*To merchants, ship brokers, agents, and all whom it may concern:*

"You are respectfully informed that all goods leaving the port of Antwerp for the United States must be inspected prior to shipping. When required, the district of origin must be authenticated.

"For general information goods are divided into the following three classes:

"*Class A.*—Articles not subject to disinfection. New and dry merchandise packed to prevent moisture incident to voyage.

"*Class B.*—Articles subject to disinfection: (1) Personal effects or bedding from infected or suspicious districts; (2) feathers, hair of all kinds, wool, fur on skins, hides and skins themselves, and all similar articles; (3) fish bladders, glue, rennets, sausage casings, and such like; (4) crude sugar, glucose, and coffee; (5) all articles not included in Class A.

"*Class C.*—Not to be shipped (forbidden): (1) Second-hand upholstery, feathe beds, pillows, down quilts; (2) food products from any infected locality; (3) rags old jute, old gunny, from similar localities.

"It is requested that you notify me at your earliest convenience of goods read for shipment, in order to avoid unnecessary delays.

"Very respectfully, yours,

"M. J. ROSENAU,
"*Assistant Surgeon, Marine-Hospital Service.*"

This circular had a good effect, for from that date goods were properly presented in time for the necessary inspection.

Previous to my arrival in Antwerp there was very little control over the emigrant while in the city. It first became necessary to select certain hotels, reserv them exclusively for our emigrants, construct proper facilities on the dock fo inspection, and arrange means for bathing and disinfection.

As there were no facilities for steam disinfection in the city it was decided to construct a suitable installation. In the meantime the disinfection was carried on in one of the compartments of the ship, the baggage being unpacked and spread upon the bed frames or upon lines strung up for that purpose.

The whole system of handling the emigrants, performing the inspection, arranging the disinfection, and the bathing, etc., went through a gradual process of evolution. Scarcely a week passed without changes and improvements.

The emigrant hotels were inspected and numerous alterations instituted.

Beds were taken out of overcrowded rooms, cleanliness insisted upon, wooden beds exchanged for iron ones, and feather beds for spring mattresses, water-closets disinfected, nuisances abated, ventilation improved, water in sufficient quantity supplied to every room, and the general sanitary conditions bettered.

When the city was declared infected it was decided that all baggage exposed to the danger of infection must be disinfected. In order to avoid this large amount of disinfection with the then meager facilities, I suggested that the baggage be intercepted at the railroad station and taken unopened from the arriving emigrant to the dock and stored there ready for shipment.

This greatly facilitated the work of inspection and disinfection, for it was on the wharf the day before sailing, and the only problem then was to separate it into two piles, the one from infected and the other from noninfected localities.

The amount of household goods and baggage taken along by some emigrants is a matter of surprise. At my request the Red Star Line has furnished me the following interesting figures, which furnish a graphic representation of the large amount of baggage taken along by each steamer:

Name of vessel.	Number of passengers.	Pieces of heavy baggage.	Estimated pieces of hand baggage.	Estimated weight.
				Tons.
Rhynland	488	209	400	14
Belgenland	1,010	502	211	26
Switzerland	686	321	551	20
Noordland	1,012	415	712	27

The figures are rather an underestimate, particularly the number of pieces of hand baggage.

The inspection of baggage was going on nicely when a serious difficulty arose. Baggage from the interior is bonded in transit at the Belgian frontier. This bonded baggage can not, according to the regulations of the custom-house, be opened on Belgian soil. The opening of this baggage was tolerated by the good will of the custom-house officials, and the inspection of the same was going on undisturbed until the commission of emigration filed an official complaint calling the attention of the custom-house inspector to this breach of their rules and regulations. This put a stop to the proceedings.

The commissioner of emigration was induced to withdraw his objections; but then the custom-house inspector said that as the complaint was on file he could not permit the opening of bonded baggage without the consent of the higher authorities. The question was then referred to the governor of the province, and by him to the sanitary board. The sanitary board passed a unanimous vote in favor of allowing the inspection. This decision, with all the correspondence, was referred to the minister of finance at Brussels. Then the question met with more delays, and, our request remaining unanswered, I appealed to our minister, the Honorable James S. Ewing, for aid. He presented the matter to the Belgian authorities and requested a speedy answer. In the meantime the inspection and disinfection were carried on under many difficulties.

The steamship is not considered Belgian soil, and it is not supposed that bonded articles—which I rejected—be removed from the ship.

The whole subject became very complicated, besides the interference to the loading of the ship which the work caused.

After several weeks of anxiety the privilege was granted, as the following letter indicates:

"ADMINISTRATIONS DES CONTRIBUTIONS DIRECTES,
" DOUANES AND ACCISES,
"*Anvers, le 21 août 1893.*

"MESSIEURS: According to my telegram of the 19th of August, No. 21948, I have the honor to inform you that in conformity with my colleagues of the department of agriculture and of the department of industry and of the department of public works, and of the depertment of foreign affairs, the minister of finance authorizes the examination as well as the disinfection of baggage in bond of the emigrants bound to the United States.

"These operations, which will take place in one of the inclosures situated on the quai du Rhin, opposite the wharf of the Red Star Line, will be done under the surveillance of the custom-house officers, with the supervision of the Government commissioners of emigration and the physicians of this service.

"Further, to satisfy the request of the minister of agriculture, the minister of industry, and the minister of public works, the superior authorities have instructed me to ask the communal administration of Antwerp to invite the local medical commission to coöperate with the commissioners of emigration for the purpose of organizing the examination and disinfection of the baggage in question in such a way that the public health does not suffer by it.

"We are, sirs, etc.,

"A. LAMBRECHTS,
"*Provincial Inspector for the Director on leave.*"

The inspection of baggage disclosed the fact that many emigrants persisted in bringing along feather beds, down quilts, and articles forbidden entrance into the United States (U.S. Quarantine Laws, Art. VII, sec. 1) despite our warnings. In consequence the following circular was widely distributed, with good effect:

[Circular 141 A.]

BAGGAGE—IMPORTANT.

"We again warn very particularly against the bringing of old bedding, as mattresses, feather beds, pillows, quilts, and the like, as their entrance into the United States is forbidden.

"Sheets and linen, as coverings, pillow slips, shirts, etc., must be thoroughly washed before they are packed.

"Steerage passengers must be in Antwerp with their baggage at least two days previous to embarkation in order to insure their passage.

"ANTWERPEN, *April 7, 1893.*"

Despite our circulars and letters, some annoyances and delays were caused by the lack of interest shown by the agents and brokers of freighters in complying with the formalities required by the United States quarantine laws. This to a certain extent seemed unavoidable, for the manifest of the cargo is not finished until the last moment. The articles and ship's papers come down from the consulate shortly before the ship is ready to clear away, and there is an utter lack of discipline and control over the crew on shore. They report for duty just about as the gang plank is being hauled in, and are usually drunk and unmanageable.

It was necessary to make a firm stand with freighters, and the delaying of a few that did not comply with the requirements of the law brought order out of chaos, and now, as a rule, the crew, the articles, the manifest, and the ship are ready for inspection when I make my visit.

When a freight boat arrives in port I am informed of the fact and the probable time of unloading the various cargo spaces, so that I may examine the bilges if necessary. At the same time a statement from the master is sent me certifying to the health of the crew during the voyage to Antwerp.

One of these certificates is given herewith:

"ANVERS, *le 25 May, 1893.*

"STEINMANN & Co.:

"We, undersigned captain and first officer of the Belgian steamship *Herrmano*, hereby declare that no sickness of any kind has occurred on board the said steamer during the last trip from Antwerp to New York via Boston and back again, from April 2 to May 20, 1893.

"D. MEYER, *Captain.*
"H. HUSSELMAN, *First Officer.*"

In case of passenger boats the physician sends me a copy of his record of sickness during the voyage. These facts and the fact from whence the ship comes are the chief factors weighed in determining whether the ship should be disinfected or not.

The next move was to prevent diseased emigrants being forwarded from the interior to Antwerp. In order to stop this the company sent out a circular, including the following sentence, placing the responsibility with the agent:

"The greatest trouble is in answering the question, 'Are you healthy?' The American authorities are very particular concerning this point, whereas the passenger and the agents pay very little attention to it. We again emphasize that no passenger should be sent to Antwerp who is not physically and mentally sound and healthy. If any passenger is sickly or is suffering from a disease or eruption which is curable he should be treated at home until entirely well. With little children special attention should be paid to eruptions and diseases of the scalp, because it sometimes happens that entire families are detained because the baby has a trouble of this character. If the passenger is suffering with a deformity or illness no attention is to be paid to the fact that he has relatives in America or that he is being accompanied by such.

"We again emphasize the fact that passengers must be in our office, with the question list properly answered, by at least 9 o'clock in the morning of the day prior to sailing. We do not guarantee the embarkation of passengers who come too late or whose question lists are not in order, the agent being responsible for delay."

This appeal met with a gratifying response and the number of rejected emigrants seemed gradually to decrease. In many instances emigrants or agents would write in advance to the company explaining some deformity or presenting a physician's certificate of some chronic diseases. These communications were often referred to me for decision.

In this connection it is well to state that an emigrant to America via Antwerp is a foreigner on Belgian soil, and a very unwelcome resident if detained or rejected on account of sickness or deformity or poverty. Formerly emigrants too poor to pay their passage money were thrown upon the charity of the city.

It appears the Belgian commission of emigration was appointed not only to look after the interests of its Kingdom, but also to protect the helpless emigrants, who in many cases were imposed upon by heartless individuals.

In all cases of detention or rejection the commissioner of emigration is entitled to a satisfactory explanation of why that particular emigrant is not permitted to sail.

An emigrant is not allowed to land in Belgium without a ticket that will take him out of the country or sufficient money to take care of himself.

The commissioners have made a ruling that no emigrant be allowed to float on the city unless he has 500 francs.

In several instances Russians by boat from Libau were prohibited from landing in Antwerp because no one would guarantee their passage and they had not enough money to comply with the requirements.

The commission also look after the general welfare of the emigrant—see that the sexes are properly separated on the boat, and such general duties looking to the protection of a friendless wanderer on a foreign soil.

SANITARY CONDITION OF THE PORT.

During the entire half year of 1893 Antwerp has suffered from the prevalence of smallpox, which attained the proportions of a small epidemic during the winter months. The disease gradually abated with the onset of warmer weather.

Smallpox is looked upon as a minor illness in Antwerp and there is no fear in the public mind concerning the disease.

Vaccination is not popular nor compulsory, except in the children of the communal schools, and only a small proportion of the inhabitants have the operation performed. Of the cases treated at the hospital 70 per cent occurred in the unvaccinated, the remainder in those who were vaccinated, but in all cases at least five years before being stricken with the disease.

From the 1st day of January to the 16th day of August 860 cases were treated at the hospital (Stuivenberg), with 192 deaths. Besides these, there were many cases in private houses in many sections of the city, and several hundred cases at Borgerhout and Berchem, outskirts of the city.

The following table is compiled from the official figures as found in the Rapport Hebdomadaire and shows the cases treated at the city hospital during the time named. The cases in private houses in Borgerhout and Berchem are not included.

For the week ended—	Total deaths.	Cases under treatment at city hospitals.	Deaths at city hospitals.
1892.			
November 26	3	16	3
December 3	4	18	3
December 10	2	19	2
December 17	5	28	4
December 24	9	17	6
1893.			
January 1	9	14	6
January 7	5	41	1
January 14	11	57	7
January 21	11	76	9
January 28	9	78	5
February 4	19	87	10
February 11	17	73	10
February 18	17	73	14
February 25	21	85	12
March 4	20	68	11
March 11	6	64	6
March 18	9	74	2
March 25	13	73	4
April 1	7	82	4
April 8	13	94	8
April 15	13	79	8
April 22	11	73	5
April 29	9	80	10
May 6	16	84	5
May 13	11	93	9
May 20	15	97	12
May 27	13	93	7
June 3	7	86	5
June 10	6	71	10
June 17	15	77	2
June 24	9	58	8
July 1	6	45	3
July 8	5	37	2
July 15	3	32	1
July 29	3	28	1

The registrar at the Hotel de Ville, the directors, and visiting chiefs at the various hospitals have been uniformly courteous in showing me the cases and in allowing me to examine the sanitary records.

There is no registration of cases occurring in private houses. I have therefore only given the official figures of cases treated at the city hospitals and the total number of deaths. These figures have steadily increased since the first of the year.

It is of interest to note that the local medical commission considered the disease to exist in epidemic form in December of 1892, in which month 20 deaths were reported. Since then the disease has become more distributed. In March of the present year there were 48 deaths, in April 53 deaths, and in May 55 deaths, from the disease in the city, exclusive of the suburbs.

In this connection it is well to state that an apparently valid objection to vaccination has been raised by the firemen of ships about to leave the port. It was stated that on account of their work in the dust and heat of the fire-hole they would suffer unusual effects. I have taken the pains to question the firemen of returning crews that had been vaccinated since my arrival in Antwerp, and from an experience of four months I can state that the objection is theoretical.

In the first week of June there was one case of cholera in the city, in a woman, resident of Antwerp, who recovered.

No new cases occurred until the last week of July, when two were reported. The cases occurred in sisters living on a boat in one of the basins. One died on the boat; the other was treated and recovered at the hospital.

The basins are artificial excavations, intended to increase the wharfage space of the port. They are connected with the river by means of narrow sluices, guarded with locks, only open at high tide, so that there is very little change of water. In consequence the water gets dark, stagnant, and rather repulsive. The basins extend several hundred meters inland, and are for the smaller craft, lighters, and freight boats.

Many of the cases of cholera which occurred here last year were reported from the small craft lying in these basins, or "doks" as they are called.

It is thought that the lighters bring the disease with the infected waters of the canals from the interior to Antwerp. These barges and lighters come into Antwerp without any supervision or quarantine.

The canals which these barges navigate intersect the entire kingdom.

During last summer 175 cases and 62 deaths from the disease were reported.

ANTWERP'S WATER SUPPLY AND SEWERAGE SYSTEM.

The larger moiety of the inhabitants of the city derive their water supply from shallow wells and from rain water, which is collected from the tiled roofs of the houses and stored in underground cisterns.

The rain water is bad from long storage. The rainfall is irregular and insufficient.

The well water is clear in the southern section of the city, and, as a rule, free from unpleasant odor or taste; but it is hard and suspicious, because the wells are sunk near cesspools.

Excreta are not allowed to be drained into the sewers, which are only for the waste waters of the household and overflow rain water. Water closets not being used, the system employed is on the conservency plan, in middens, which are pumped out at intervals.

The other source of water and the supply which is largely used by the shipping interests is brought about 10 miles in iron conduits from the River Néthe—a branch of the Scheldt.

The River Néthe is a small, rapidly flowing stream with two strong tidal movements daily.

The intake is at Waelham. The town of Duffel, with 5,934 inhabitants, is situated on the river a few miles above the intake.

It has been shown by experiments with floating bottles that the tidal movement brings the waste waters of Brussels (482,525 inhabitants) and the waste waters of Malines (51,558 inhabitants) up to the pumping station at Waelham.

In order to eliminate this latter factor the water is taken into the decanting basin three hours after flood tide and stored there for the day's supply.

The river water at the pumping station has a dirty brown-black color, smells offensively, and is admitted to be very bad. It deposits a heavy sediment, is hard, contains rather a large percentage of free and combined ammonia, of nitrates and dissolved organic matter.

The bacteriological examinations give us as a rule 250,000 colonies to the cubic centimeter.

This water is purified by means of the Anderson process and afterward filtered through sand, so that it is furnished to the consumers clear, aerated, and without smell, but a peculiar taste like that of rain water, said to be due to its softness. There is an absence of free ammonia, a marked diminution of the albuminoid ammonia and the dissolved organic matter, and a decided decrease in the number of germs.

The bacteriological examination of the water as it flows from the faucet frequently gives specimens containing less than 100 colonies per cubic centimeter.

The Anderson process for the purification of river water was first put into practical application at Antwerp in 1885, although previous to this date iron had been used for the purification of the water in the form of filters. These filters, which consisted of layers of Bishop's spongy iron and sand, soon became clogged and useless.

Since the success obtained by the Anderson process at Antwerp has been established several other smaller cities, including a suburb of Paris, have adopted a similar process, using iron to purify their waters.

Although the purification of river water by iron eliminates from 45 to 85 per cent of the organic matter and effects a marked diminution of the nitrates, albuminoid ammonia, and other elements usually considered noxious, it does not pretend to eliminate the factors of contagious diseases, as cholera, typhoid fever, etc.

The investigations have shown that the iron has no effect on the number of bacteria in the water. The diminution of the number of germs is a result of the filtration through sand. In this sand filtration the water of the River Néthe acts favorably, owing to its biological character. A scum of green algae about a quarter of an inch thick grows on the surface of the sand. The gelatinous zoögleal masses of bacteria grow in the meshes of this matted carpet and so effectually strain the other bacteria and all suspended matter that the underlying sand does not lose its clean, gray color, consequently the cleansing of the filters is an easier process than that of other sand filters which I have seen.

The principle of the Anderson process consists in the production of an intimate contact between metallic iron and the water to be purified. The action of the iron is one of reduction to be followed in the water leaving the apparatus by one of oxidation. The carbonic acid acts upon the metal, forming ferrous carbonate.

On being exposed to the air the ferrous salt is converted into ferric oxide ($F^e_2\ O_3$) and the $C\ O_2$ liberated as a gas.

In the practical application the river water is passed through revolving iron cylinders containing a system of shelves arranged in such a manner that the particles of spongy iron are showered down through an onward-flowing stream of water. The water leaving the revolving cylinder contains the ferrous salt and is allowed to flow over a cascade for aeration and there remain several hours in subsiding basins until all the iron is oxidized. From the subsiding basins the water flows on to the filtering beds.

The brownish color of the water in the subsiding basin owing to the red oxide of iron is pronounced.

The amount of organic matter oxidized depends largely upon its origin.

Organic matter of animal origin is unstable and easily broken up; organic matter of vegetable origin is more difficult to oxidize.

The waters of the Néthe in time of drought contain a rather high percentage of vegetable organic matter which it obtains from the peaty stratum which underlies the alluvial soil of the valley of the river. This always gives trouble at the waterworks, for the ammonia, not being entirely eliminated, dissolves the iron rust from the 10 miles of piping and makes the water rust-stained as it flows from the faucets at Antwerp, although it is clear as it leaves the filtering beds.

This water as supplied to the inhabitants of Antwerp can not be commended for its potability, but it is the best at hand, and is at least at present free from the suspicion of carrying infectious diseases, excepting perhaps typhoid fever.

This water has been used by the boats of the Red Star Line for some years and has given satisfaction. On account of the present uncertainty, it was decided by this company to take the precaution of boiling all the water for drinking purposes. The order was issued and will go into effect for all the boats in their west-bound passage.

It is not possible for boats to contaminate their supply with Scheldt water, because the river is brackish at Antwerp, although quite 40 miles from the sea.

But it is said small crafts for economical reasons take water from an old creek that ends in a blind tank near the docks (Canal des Brasseurs). This water is very bad. I have made arrangements with Prof. Kenna, of the waterworks company, by which I can know for each boat the source of supply. The arrangement consists of a certificate, of which the following copy is introduced.

ANTWERP WATERWORKS COMPANY, LIMITED.

We, the undersigned, Ad. Kenna, Dŕ. Sc., manager, hereby certify that the ship named ——, of which is master ——, has on this day —— been supplied with —— hectoliters of the company's water, after the tanks of the said vessel have been cleansed according to the instructions of the medical office of the U. S. Marine-Hospital Service.

—— ——,
The Superintendent of the Shipping Supply.

—— ——,
Manager Antwerp Waterworks Company.

It is manifestly impossible for our inspector on this side to examine the fresh-water tanks of every steamship—to see that they are emptied and scrubbed and properly cemented or limed before filling, so that this cooperation of the waterworks company is a relief.

This decision in favor of the water of the river Néthe to the other sources of supply in Antwerp corresponds to the decision arrived at by Dr. W. Collingridge, medical officer of health of the port of London.

NUMBER OF VESSELS.

The records for the year 1892 show an average of 22 ships per month leaving Antwerp for the United States.

During the four months, April, May, June, and July of 1893, I issued 88 bills of health, being also an average of 22 vessels per month.

Besides this there is the Hansa Line to Canada and several boats which make Antwerp a port of call.

CHARACTER OF VESSELS.

With reference to the character of the vessels, I have the honor to report that the ships leaving this port for the United States may be divided into four classes: (1) Passenger boats; (2) freighters, regular liners, and tramps; (3) petroleum tank steamers; (4) sailing vessels.

Passenger boats are those of the Red Star Line (International Navigation Company), the Hansa Line (Hamburg-American Packet Company), and the French Line (Compagnie Commerciale de Transport).

The Red Star Line is the only passenger line having its home port in Antwerp; biweekly sailings (Wednesdays and Saturdays).

The Hansa Line comes from Hamburg, making Antwerp a port of call en route to Montreal; weekly sailings (Tuesdays).

The French Line from Havre stops at Antwerp on the way to New Orleans; monthly sailings.

The boats of the Red Star Line are cleanly, well kept, and the newer ones are supplied with many modern conveniences. The older ones were for the most part deficient in ventilation. This was largely corrected as the ships came into port.

All the upper steerages of the boats of the Red Star Line are subdivided by wooden partitions into rooms, each of which have 24 to 28 berths. These partitions cut up the air space, prevent free circulation of the air, and shut out much of the light. The only advantage claimed for this subsectioning is the measure of privacy which it lends. Families and the better classes of emigrants always prefer these rooms to the open system of bunks, which are built in the lower steerages (zwischen deck).

All the berths of the line are built of wood. The compartments as well as the berths are painted each trip with a mixture of lime, water, and glue. This combination makes an admirable whitewash. The glue holds the lime so that it does not come off, even with brisk rubbing. Its cheapness and superiority from a hygienical point of view render it preferable to paint.

Each emigrant is furnished with a bag of straw, which serves him for a mattress. The bag is washed and the straw renewed each trip.

The emigrant must supply any other bedding that he may wish to use.

Steerage passengers are furnished tables for eating. The food is served and the dirty dishes removed by the stewards.

There is a small iron tank with a constant supply of water for drinking purposes in each steerage compartment. Spring stopcocks prevent undue waste. In accordance with a recent order the water is first boiled.

A constant stream of water is kept flowing through the latrines and water-closets while the ship is at sea.

The bilges are cleansed and scraped in the usual way. If there is any odor carbolic acid is poured into each bilge.

It is difficult to keep freighters clean in port, particularly tramp steamers. The crew is discharged when the ship ties up at the dock, and only recommence their duties when the vessel leaves port. The stevedores keep things upset and in confusion. The coaling tends to make everything black.

The forecastles are, as a rule, painted dark brown or drab, so that the dirt does not show. I have recommended to several captains to scrape off the paint and coat the bunks and walls every trip with a mixture of the lime and glue mentioned above. This in several instances has been done.

The water-closets for the crew of freighters have no flushing arrangements and as they are not washed while the boat is in port, they are apt to become clogged and foul.

The tank steamers, from the simplicity of their construction and the character of their cargo, are, from a hygienical point of view, perhaps the most satisfactory ships which clear from here for the United States. They bring petroleum to Antwerp and return in water ballast. This water is taken from the basins, where it becomes rather stagnant. Captains are advised to pump it out at sea and take in salt water. This they declare to be practical.

Sailing vessels leaving here are mostly for ports on the Pacific coast. The bulk of their cargo is glass, cement, and wines.

These boats are for the most part kept clean and sweet. The crews average a better class of men than those on steamships.

The sailors' forecastle on these sailing ships is situated amidships, built up on the main deck and divided by a longitudinal partition for the two watches. These forecastles are light and airy and easier to keep clean than those in the bow of a steamship.

The apprentice boys bunk aft with the officers and usually enjoy fair sleeping space.

It was the custom for freighters to leave port in a dirty condition and trust to cleaning up at sea, but now a clean bill of health is not issued unless the ship is in a good sanitary condition.

NUMBER OF EMIGRANTS.

During four months of 1893 there was a total of 16,406 steerage passengers—mostly emigrants taken by the Red Star Line from here to New York and Philadelphia, as follows: During April, 3,938; May, 3,263; June, 4,673; July, 4,532; total, 16,406.

CHARACTER, NATIONALITY, AND TOTAL NUMBER OF EMIGRANTS.

The character of the emigrants passing through Antwerp may be characterized as fair.

The principal nations represented are Germany, Austria, Belgium, England, Italy, Luxemburg, Switzerland, Holland, Russia, and France.

The larger numbers come from Germany, Austria, and Hungary. A comparatively small number come from Italy, Russia, and Galicia.

Lately numbers of Arabs, Armenians, and Greeks have been passing through Antwerp.

The following figures are taken from the report of the Belgian commissioner of emigration and show the total numbers and the nationality of the emigrants embarking at Antwerp for the States for the years 1890, 1891, and 1892:

Country.	1890.	1891.	1892.
Germany	14,660	20,440	17,333
Austria	6,442	9,267	11,739
Russia	3,000	4,220	806
Belgium	1,987	2,718	3,840
England	1,460	1,013	1,545
Italy	761	1,557	1,508
Luxemburg	1,053	1,372	1,332
Switzerland	1,074	920	1,226
America	795	714	998
Holland	485	635	968
France	480	623	438
Scattering	373	249	177
Total	32,550	43,728	41,910

CANADIAN PASSENGER LINE.

Through the efforts of Surg. W. A. Wheeler, Marine-Hospital Service, I received on June 12, 1893, an invitation from the Hamburg-American Packet Company to examine the emigrants embarking at this port for the Hansa Line.

The Hansa Line has weekly sailings during the summer; comes from Hamburg and makes Antwerp a port of call en route to Canada. The boats take an average of 150 emigrants from here every week.

The majority of the passengers embarking here are emigrants for Chicago and the Northwestern States. A number are destined to Canada, Winnipeg, or Vancouver, with no intention of going into the States.

They average a fair lot and are required to carry out the same programme as those for the Red Star Line.

HOUSING AND HANDLING OF EMIGRANTS.

Emigrants come to Antwerp by train and by boat at all hours of the day and night.

They are met at the station or dock by runners from the hotels and conducted, according to nationality, to the various hotels in the city.

There are 13 hotels in various quarters of the city which have been set aside for the exclusive use of emigrants.

The emigrants are classified according to nationality. This division is closely adhered to. The classification is as follows:

Hotel.	Receive only those from—
Hotel Limburg Hotel Stad Brugge	Russia.
Hotel Chicago	Switzerland.
Passagier Hotel	Italy.
Hotel Wiesbaden	Rhine provinces.
Nassauer Hof	Germany.
Gasthaus zur Hoffnung	Hungary.
Hotel New York	The Netherlands.
Hotel Philadelphia	Galicia.
Elsässer Hof	Southern Germany.
Hotel Baudry-Suarré	Walloons.
Hotel Luxembourg	Luxemburg.
Hotel Stadt Frankfurt	Tyrol and Bavaria.

This separation according to districts of origin has much to recommend itself.

The hotels accommodate from 30 to 200 guests, and although some of them are rather deficient in ventilation and the modern conveniences usually found in newer buildings, still they are admirably suited for their purpose.

Should disease break out in any one of the hotels it would be a comparatively easy matter to disinfect and detain those occupying the hotel at the time.

This actually occurred on the 1st of July, when at Hotel Esperance a case of varioloid came to light in one of the Hungarians detained there under observation.

The house was at once quarantined, the patient sent to the hospital, and the 38 emigrants occupying the hotel at the time vaccinated.

Those in whom the vaccination proved successful were allowed to sail on the next Saturday's boat, being seven days' detention. They were first bathed and their clothing disinfected at the Asile de Nuit.

The remainder were kept awaiting developments the full fifteen days of incubation of the disease.

I took a list of the names of the 38 emigrants, so that I had a good check that they would actually serve out their time.

The hotel was cleansed, aired, and disinfected by the authorities.

The hotels are visited by Dr. De Fraysses, the superintending surgeon of the Red Star Line; and every month they are inspected by the Belgian Commission of Emigration. Each one of the thirteen buildings are disinfected with sulphur dioxide at least once each month, whether disease exists or not. Chloride of lime and carbolic acid are liberally used about water-closets, latrines, etc.

The hotel keepers are all anxious to follow out any suggestions from the steamship company, for their patronage depends upon the faithfulness with which they obey directions concerning the handling of the passengers and their baggage, and upon the cleanliness of their hostelries.

BATHING OF EMIGRANTS.

Emigrants are required to be clean when presented for inspection. The hotel keepers are held responsible for presenting untidy applicants.

Emigrants from infected localities are bathed and have their clothing disinfected at the Asile de Nuit.

The Asile de Nuit is a magnificent charity, designed to shelter and clothe the destitute in winter. Fortunately for our purposes it is not used during the summer, and has been placed at the disposal of the Red Star Line through the personal kindness of the management.

There are accommodations for bathing 14 at one time. There is an abundant supply of warm water and plenty of soap. The constant attention of the attendant is required, for most of those washed must first be taught what bathing means.

During the bath another attendant collects the clothes which have been placed in front of each bathroom and carries them to the basement for disinfection.

The disinfection plant consists of a roomy steel chamber, walled in with bricks. The truck is suspended on rollers, and is designed to receive the clothes by hanging them on hooks. There is provision for dry heat and live steam, being in all respects a model disinfecting apparatus.

The emigrants, in the meantime, who have finished their bath are supplied with long woolen gowns in which they must await their clothing from the disinfecting room.

Before the emigrant is sent back to his hotel he is given a card, with name and date, and the stamp of the Asile de Nuit, which is a guaranty that he has passed through the process.

DISINFECTION OF BAGGAGE.

The baggage to be disinfected is steamed in one of the compartments of the ship. This method is very unsatisfactory, and owing to the lack of interest in the work shown by the workmen placed at my disposal constant watching is necessary to have the disinfection properly carried out.

DISINFECTION IN THE COMPARTMENT OF A SHIP.

From the observations made here it does not seem possible to obtain a temperature of 100° C. in one hour's time.

In these observations the temperature is taken with a self-registering maximum thermometer suspended in the compartment so that the instrument swings about a foot from the floor.

The following is a table of 8 observations, and shows the maximum temperature obtained to be between 89° and 98° C.:

Name of vessel.	Date.	No. of compartment.	Size.	Diameter of steam pipe.	Time of steaming.	Boiler.	Pressure in boiler.	Maximum temperature.
	1893.		*Cubic feet.*	*Inches.*			*Pounds.*	
Rhynland	June 16	4	9,130	1.5	1 hour	Donkey	90	89.5° C.
Pennland	June 20	1	9,455	1.9	do	do	?	97 ° C.
Westernland	June 23	4	16,264	1.5	do	Main	75	93.5° C.
Noordland	June 30	4	12,967	1.5	1½ hours	Donkey	75	98 ° C.
Waesland	July 7	3	16,824	2.0	1 hour	do	75	97 ° C.
Illinois	July 3	3	9,600	1.9	do	Main	112	97 ° C.
Switzerland	July 11	2	7,277	1.5	do	Donkey	60	97.5° C.
Friesland	July 14	6	13,060	1.5	do	do	68	98 ° C.

A small chamber is selected and care is exercised that all of the compartment is above the water line. The hatches are calked and covered with tarpaulin. The ports are screwed close, the ventilators tamponed.

The large surface presented for condensation and the rapid radiation through the thin iron walls are matters not capable of correction.

The greatest practical difficulty in steam disinfecting in a ship's compartment is to drive out the air. This arises from the size and shape of the chamber, and from the fact that the opening for the exit of the air is just the contrary to what it should be in a well-appointed disinfector.

Even though the temperature has not in any case reached 100° C., still in two instances the pressure has blown off the hatches. This is explained by the expansion of the heated air remaining in the compartment.

I find that with even a certain amount of care wearing apparel comes out of this steaming somewhat the worse for the process. It is difficult to keep linen clean and clothing tidy under the circumstances. The articles come out wet or damp. The process is far from elegant.

As a rule, a steamship does not use its main boiler while in port. The donkey boiler is of fair size, being required not only to drive the donkey engine, but also the several winches and dynamos for electric lighting. It is interesting to note that on the two occasions on which the main boiler was used the thermometer did not register as high a temperature as on several occasions with the smaller boiler.

Considerable delays were met with in obtaining the ground and the privilege from the city to construct the disinfection installation, but at the present writing the building is nearing completion and it is hoped will soon be ready for use.

DESCRIPTION OF THE DISINFECTING PLANT.

The disinfecting and bathing installation is being built opposite the quay, within easy reach.

The structure is 44 by 18 meters, built substantially of brick and iron, with sky and side lights.

The building is divided transversely so as to establish a receiving or "infected" side and a distributing or "sterile" side.

Two boiler-iron disinfectors, rectangular in shape, stand in the middle of the building. Each disinfector is 6.8 by 3.0 by 3.25 meters in size.

On the right of the disinfectors are two rows of baths, fourteen in all.

On the left of the disinfectors is a tank for carbolic solution and the division for the steam boiler.

The idea is to have the emigrant pass through on the right, where he will be bathed; to have his clothing pass through one of the disinfectors, where it will be steamed, and to have his shoes, hat, valise, etc., pass through on the left, when they will be immersed in the carbolic solution.

The emigrant and his possessions are assembled on the sterile side, and then passed on to the boat or barracks, as the case may be.

The disinfectors are not double walled, although they have the usual serpentine of steam pipes for dry heat, as well as the connections for live steam.

The trucks run through on rails from one side to the other, the doors closing by steam-tight fitting at each end of the disinfectors.

The general plans and details are given herewith.

At the present writing all the masonry and ironwork is finished.

CHARACTER OF MERCHANDISE.

The bulk of the cargo from this port consists of glass, ironware, cement, mineral waters, wines, silks, wood pulp, and new manufactured articles, free from the suspicion of carrying infection.

Of the exports arising in this consular district, and over which this consulate has direct control, are two articles deserving special mention—feathers and skins.

The feathers are used for bedding. The "raw" feathers come in compressed bales from China. They are cleansed and prepared here by Messrs. D. & Co., whose warerooms I have visited for the purpose of inspecting the process.

The feathers are first picked clean of adhering material and then assorted. They are then exposed ten to fifteen minutes to steam under pressure in iron cylinders with revolving "mixers," which keep the feathers agitated and in contact with the steam. They are then passed to another cylinder and exposed to hot air until thoroughly dry. They are passed a second time into the steam cylinder. This time the steam is saturated with creoline. The feathers are again dried. Sometimes the process is repeated a third time. The object of all this is to destroy the organic matter clinging to the feathers and kill all germs that might give rise to putrefaction.

The process insures a good disinfection, and the feathers which have passed through this process are passed without question.

The skins come from Australia and are prepared here for tanning in our country.

On the occasion of my visit of inspection to the warehouse of Messrs. V. & Co. the process of preparation shown to me was as follows: The skins are soaked in hot water and all the hair and subcutaneous tissue scraped off. They are then soaked three or four weeks in a saturated solution of chloride of lime, washed in water, and then pickled in weak sulphuric acid. They are shipped in the acid, wetted, in casks.

Skins prepared in this manner are also passed without further formality.

Chicory and acorns, which are sent in rather large quantities from here, I believe are used at home for the adulteration of coffee.

A considerable number of cases of household furniture are brought to Antwerp for shipment. These are usually invoiced in an interior consular district. They contain the upholstered furniture and bedding of the family who have probably migrated some months before. In one instance eleven cases which had already been refused at Hamburg were brought here for shipment. The rule forbidding old upholstery and feather beds is enforced in all such cases.

Flax waste is the short fiber, too short for weaving. It is compressed into bales the same as new cuttings, which also occasionally come through the interior. These are both used in the United States for paper making. They are inspected; but disinfection is not required if coming from a free district.

Bagging in which grain is shipped from America practically does not leave the ship. The grain is emptied down chutes into a lighter. As long as the vessel is free from suspicion no disinfecting is required.

Bagging which leaves the ship for the city or the interior is returned in bales like rags, and treated as such, disinfection being required.

Rags come in large quantities from the interior of Belgium to Antwerp. They are accompanied by certificates of health, of origin, and of disinfection by sulphur.

The consul here has declined to sign invoices of rags arising in this consular district on account of the prevalence of smallpox. It has been intimated that it would be a relatively easy matter to send these rags to a neighboring or distant consular district and have them invoiced from there, for it is a practical impossibility to know just where any given bundle of rags may have been gathered.

A CONDENSED STATEMENT, BY MONTHS, OF THE NUMBER OF VESSELS INSPECTED, INCLUDING OTHER ITEMS IN THE WEEKLY ABSTRACTS OF BILLS OF HEALTH.

April.—Beginning with the 7th there were 15 boats inspected during the month, 12 being steamers, 2 ships, and 1 bark. Nine were bound for New York, 2 for Baltimore, and 1 each to Savannah, San Francisco, Philadelphia, and Pensacola.

A total of 914 in the crews.

There were 391 cabin passengers and 3,938 steerage passengers.

May.—During the month 13 boats were inspected, of which 12 were steamers and 1 bark. There were 9 bound for New York, 2 for Philadelphia, and 1 each for Baltimore and San Francisco.

There was a total of 662 in the crews. Three hundred and twenty-six cabin passengers and 3,263 steerage passengers were inspected. Of these, 1,597 from Hungary, 206 from Russia, 75 from Galicia, and 39 from Marseilles were detained under observation as coming from cholera-infected districts.

A total of 1,970 pieces of baggage was inspected, of which 539 were disinfected.

June.—During the month of June 31 vessels were inspected, of which 27 were steamers, 3 barks, and 1 ship. Of these, 15 were bound for New York, 3 for Boston, 3 for Philadelphia, 3 for New Orleans, 4 for Baltimore, and 1 each to Galveston, Portland, Oreg., and Tybee Bay.

There was a total of 1,557 in the crews; a total of 453 cabin passengers and 4,673 steerage passengers was inspected. Of the latter, 351 from Galicia, 160 from Russia, and 83 from Marseilles were detained, bathed, and their clothing disinfected. There were 1,446 from Hungary, but not all were considered as coming from infected localities. Sixteen from Antwerp were first vaccinated before embarkation.

A total of 4,515 pieces of baggage was inspected, of which 775 were disinfected.

July.—During the month of July 29 vessels were inspected; of these, 22 were steamships, 5 ships, and 2 barks.

Destination.—For New York, 10; Philadelphia, 6; Baltimore, 3; Boston, 4; Portland, Oreg., 2, and 1 each to Savannah, Port Everett, Charleston, and San Francisco.

A total of 1,384 in the crews.

A total of 442 cabin passengers and 4,532 steerage passengers was inspected, of which 353 from Galicia, 292 from Russia, and 170 from Marseilles were treated as coming from cholera-infected districts.

During the month a total of 2,941 pieces of baggage was inspected, of which 506 pieces were disinfected.

In concluding this report it is a pleasure to be able to state that the work on this side of the ocean has been attended with gratifying results.

Ships have left port in a better condition.

Many articles of merchandise have been disinfected; some refused.

About a thousand sailors have been vaccinated.

A number of undesirable and diseased emigrants have been refused passage. Many have been detained, and the larger majority have been cleansed and put into better condition before embarking. Considerable dirty baggage has been eliminated and much more disinfected.

The fact that none of the passenger boats have so far carried contagious disease out of port is looked upon with satisfaction by the steamship company, who feel that the efforts they have expended have in no small measure aided this good result.

Very respectfully, your obedient servant,

M. J. ROSENAU,
Assistant Surgeon, Marine-Hospital Service.

REPORT

OF THE

COMMISSION APPOINTED TO INVESTIGATE THE CHOLERA EPIDEMIC AND THE DANGER OF TRANSMISSION OF CONTAGIOUS DISEASES FROM FOREIGN COUNTRIES.

1893.

REPORT OF THE COMMISSION TO INVESTIGATE THE CHOLERA EPIDEMIC AND THE DANGER OF CONTAGIOUS DISEASES FROM FOREIGN COUNTRIES.

To the Surgeon-General of the Marine-Hospital Service:

SIR: In compliance with the instructions contained in your letter dated November 26, 1892, relative to investigations to be conducted by us abroad, concerning the present epidemic of cholera, and other matters, we beg leave to submit herewith a report in accordance with the following letters of appointment and instructions:

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
Washington, D. C., November 19, 1892.

Dr. WALTER KEMPSTER,
Washington, D. C.:

SIR: You are hereby appointed a special agent of this Department, for the purpose of visiting the principal ports and countries of Europe, and there investigating the subject of the cholera epidemic, under such instructions as shall be furnished you by the Supervising Surgeon-General of the Marine-Hospital Service. Your compensation will be at the rate of $10 per diem, in addition to actual disbursements for transportation, and $10 per diem as allowance for subsistence and incidental expenses other than transportation, the appointment to take effect from date of oath.

Respectfully yours,

CHARLES FOSTER, *Secretary.*

The following is the letter of instructions :

TREASURY DEPARTMENT,
OFFICE OF THE SUPERVISING SURGEON-GENERAL,
MARINE-HOSPITAL SERVICE.
Washington, D. C., November 26, 1892.

To Surg. Fairfax Irwin, Marine-Hospital Service, and Dr. Walter Kempster, Special Agent Treasury Department, acting under instructions of the Marine-Hospital Bureau.

SIRS: Having been designated with the approval of the Secretary of the Treasury and the President of the United States for the purpose of visiting foreign ports and places with a view to obtaining information to aid in the prevention of the introduction of cholera into the United States, the following instructions are hereby given you for your guidance. You will proceed together, sailing from New York December 7, for Liverpool and London. En route you will perfect the details of plans for carrying out the purposes of your mission as contained in this letter.

At places abroad, where you may act more efficiently together, you will so serve, but when for the purpose of greater expedition or for any special reason it seems proper that the territory to be covered should be divided between you, you will arrange such division.

Your duties are:

First. To ascertain whether the provisions of Department circulars, copies of which are furnished you, relating to the disinfection of personal baggage of immigrants are being properly carried out at ports of debarkation; and whether appliances have been provided by the steamship companies or other authorities for that purpose.

Second. To ascertain whether rags from infected districts are being shipped to the United States either directly or by transshipment from any one of the infected ports.

Third. To ascertain if the provisions of Department Circular No. 143, requiring disinfection of all rags, are being complied with or evaded.

(Attached is a list of the principal ports from which rags are shipped to the United States. Appendix A.)

Fourth. You will visit the various consular officers and make report upon the methods of certifying true bills of health, and the means taken to require disinfection, the certificates of the consular officers being the means by which assurance is felt by the national and local quarantine officers with regard to the safety or nonsafety of the admission of foreign articles of merchandise and persons.

You are requested to impress upon the consuls the importance of their office as an adjunct to the quarantine system of the United States; and at ports or places where in your opinion, formed after careful canvass of the situation, a medical officer should be detailed or appointed to assist the consuls in sanitary measures, you will make recommendation to that effect.

You are directed to impress upon each consul the necessity of keeping the Marine-Hospital Bureau thoroughly informed in regard to contagious or epidemic diseases, by letter ordinarily, but by cable whenever the circumstances seem to warrant it. The sudden appearance of cholera in the neighborhood of any consular district should be transmitted by cable to the Marine-Hospital Bureau direct; and any unusual event, occasion, or cause that would jeopardize the health of the United States should be cabled at once.

It is expected that your labors will be completed in two or three months. Should it become necessary, your tour may extend through Russia and to the principal ports of entry on the Mediterranean.

Special attention will be given to the character of merchandise shipped to the United States, and to any special danger of the introduction of cholera through this medium.

You will bear in mind the fact of the World's Columbian Exposition to be held in the city of Chicago in the ensuing year, and you will promptly report by cable, if necessary, any danger of the introduction of cholera that may seem evident to you through the medium of the articles shipped to America for the said World's Fair.

Attached is a memorandum for your further guidance.

Respectfully yours,

WALTER WYMAN,
Supervising Surgeon-General, Marine-Hospital Service.

Memorandum.—Make special inquiry concerning wools, hides, manufactured fabrics, shoddy. The danger to be apprehended from these commodities. Can they be practically disinfected.

Following is the list of principal ports from which rags are shipped to the United States: Königsberg, Stettin, Berlin, Hamburg, and Bremen, Germany; Rotterdam and Amsterdam, Holland; Antwerp, Ghent, and Brussels, Belgium; Copenhagen, Denmark; the ports of Great Britain; Paris, Rouen, Rheims, Havre, Bordeaux, and Marseilles, France; Leghorn, Genoa, and Naples, Italy; Catania, Sicily; Trieste, Austria; Alexandria, Egypt, and Constantinople, Turkey.

Forward, so far as possible, a brief summary of measures taken by the countries or municipalities visited to protect themselves against the introduction or spread of cholera, particularly the measures in England relating to rags, mailing a brief report from each port visited, and a full report when the work is completed.

The Department circulars relating to the disinfection of immigrants' baggage and commodities considered liable to convey contagion, and which prescribe methods to be employed, are as follows:

[Circular.]

PERSONAL EFFECTS AND BAGGAGE OF IMMIGRANTS AND OTHERS FROM DISTRICTS INFECTED WITH CHOLERA TO BE DISINFECTED AT PORTS OF DEPARTURE.

1892. Department No. 141.]

TREASURY DEPARTMENT,
OFFICE OF THE SUPERVISING SURGEON-GENERAL
MARINE-HOSPITAL SERVICE,
Washington, D. C., August 17, 1892.

To Collectors of Customs, Medical Officers of the U. S. Marine-Hospital Service, Agents of Foreign Steamship Lines, Local Quarantine Officers, and others whom it may concern:

The act approved April 27, 1878, entitled "An act to prevent the introduction of contagious or infectious diseases into the United States," provides that no vessel coming from any foreign port or country where any contagious or infectious diseases exist, or any vessel or vehicle conveying persons, merchandise, or animals affected with any contagious disease, shall enter any port of the United States or pass the boundary line between the United States and any foreign country, except in such manner as may be prescribed under said act.

Furthermore, section 4792 of the Revised Statutes of the United States provides as follows:

"The quarantine and other restraints established by the health laws of any State respecting any vessels arriving in or bound to any port or district thereof shall be duly observed by the officers of the customs revenue of the United States, by masters and crews of the several revenue cutters, * * * and all such officers of the United States shall faithfully aid in the execution of such quarantine and health laws, * * * and as they shall be directed from time to time by the Secretary of the Treasury."

Official information having been received of an epidemic of cholera in Russia, and in view of the large immigration into the United States from said country, and of the danger that exists of the introduction of cholera into the United States through the medium of personal effects of said immigrants, it is hereby ordered that on and after September 18, 1892, no vessel having on board personal baggage, bedding, clothing, etc., belonging to immigrants from Russia, or belonging to immigrants from any cholera-infected district, shall be admitted to entry into the United States unless accompanied by a certificate from the consular officer at the port of embarkation to the effect that said personal effects, baggage, etc., have been disinfected in accordance with the method hereinafter described.

For the disinfection of said articles one or more of the following methods will be used, all articles to be unpacked and freely exposed for disinfection:

1. Boiling in water not less than one hour.

2. Exposure to steam not less than one hour, the steam to be of a temperature not less than 100° C. (212° F.) nor greater than 115° C. (239° F), and unmixed with air.

3. Solution of carbolic acid of a 2 per cent strength.

This method (No. 3) may be applied only to leather goods, such as trunks, satchels, boots, shoes; to rubber goods, etc., the articles to be saturated with the solution.

WALTER WYMAN,
Supervising Surgeon-General, U. S. M. H. S.

Approved:

O. L. SPAULDING, *Acting Secretary.*

This circular was amended as follows:

[Circular.]

PERSONAL EFFECTS AND BAGGAGE OF IMMIGRANTS FROM ALL EUROPEAN AND ASIATIC PORTS TO BE DISINFECTED AT PORTS OF DEPARTURE.

1892. Department No. 147.]

TREASURY DEPARTMENT,
OFFICE OF THE SUPERVISING SURGEON-GENERAL
MARINE-HOSPITAL SERVICE,
Washington, D. C., August 24, 1892.

To Collectors of Customs, Medical Officers of the U. S. Marine-Hospital Service, Agents of Foreign Steamship Lines, Local Quarantine Officers, and others whom it may concern:

Department circular No. 141, dated Agust 17, 1892, relative to the disinfection of the personal effects and baggage of immigrants prior to embarkation, is hereby extended to include the baggage and personal effects of immigrants from all European and Asiatic ports; and it is further ordered that the provisions of the circular thus amended shall become operative on and after this date, except for articles of baggage, etc., afloat prior to the promulgation of this order, which must be disinfected on arrival.

H. W. AUSTIN,
Surgeon M. H. S., for the Supervising Surgeon-General.

Approved:

CHARLES FOSTER, *Secretary.*

[Circular.]

VESSELS FROM CHOLERA-INFECTED DISTRICTS TO BE FORBIDDEN ENTRY UNLESS PROVIDED WITH CERTIFICATES OF DISINFECTION.

1892. Department No. 112].

TREASURY DEPARTMENT,
OFFICE OF SUPERVISING SURGEON-GENERAL
U. S. MARINE-HOSPITAL SERVICE,
Washington, D. C., July 8, 1892.

To Collectors of Customs, Medical Officers of the Marine-Hospital Service, and others whom it may concern:

The act approved April 29, 1878, entitled "An act to prevent the introduction of contagious or infectious diseases into the United States," provides that no vessel coming from any foreign port or country where contagious or infectious disease exists, nor any vessel conveying infected merchandise, shall enter any port of the United States or pass the boundary line between the United States and any foreign country except in such manner as may be prescribed under said act.

Information has been received that cholera prevails in the Caucasus, in eastern European Russia, in Persia, in Calcutta, and on the western littoral of the Red Sea; and in view of the threatening further spread of the disease and because of the danger which attaches to rags, furs, wool, hides, etc., which may have been gathered in the infected districts, and to articles of personal wear therefrom, it is hereby ordered that no vessel having rags, furs, skins, hair, feathers, boxed or baled clothing or bedding, or any similar article liable to convey infection, hailing from any port in the district aforesaid, and no vessel from any port carrying the above-mentioned merchandise or immigrants from the present infected districts or from districts that shall hereafter be officially declared infected, will be allowed entry to any port in the United States unless provided with either a consular certificate or a certificate from a medical officer of the Marine-Hospital Service or State or local quarantine officer of the United States to the effect that the vessel, cargo, personal effects, etc., have been disinfected in accordance with the methods herewith prescribed.

A. *Disinfection of vessels.*—The disinfection of the vessel must be in accordance with the most efficient quarantine practice and will be by one or more of the following methods:

1. Bichloride of mercury.
2. Sulphurous oxide.
3. Steam heat.

In addition to the above, thorough cleansing, flushing with sea water, etc.

B. *Disinfection of articles of merchandise, personal effects, etc.*—For the disinfection of the articles of merchandise, personal effects, etc., mentioned in the circular one or more of the following methods will be used, all articles to be unbaled:

1. Boiling in water not less than one hour.

2. Exposure to steam not less than one hour, the steam to be of a temperature not greater than 115° C. (239° F.), and unmixed with air.

All bedding and clothing must be subjected to method No. 1 or No. 2.

3. Exposure not less than six hours to sulphurous acid gas, made by burning not less than 3 pounds of roll sulphur to each 1,000 cubic feet of space.

4. Exposure not less than six hours to an atmosphere containing 3 per cent of sulphurous acid gas liberated from its liquid state (liquid sulphur dioxide).

5. Solution of carbolic acid of a 2 per cent strength.

This method (No. 5) may be applied only to leather goods, such as trunks, satchels, boots, shoes; to rubber goods, etc., the articles to be saturated with the solution.

WALTER WYMAN,
Supervising Surgeon-General, U. S. M. H. S.

Approved by direction of the President:
A. B. NETTLETON, *Acting Secretary.*

CONSULAR CERTIFICATES OF DISINFECTION REQUIRED WITH ALL IMPORTATIONS OF RAGS FROM FOREIGN PORTS—ABSOLUTE PROHIBITION OF RAGS FROM DISTRICTS KNOWN TO BE INFECTED WITH CHOLERA.

1892. Department No. 143.]

MARINE-HOSPITAL SERVICE,
TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
Washington, D. C., August 19, 1892.

The act approved April 29, 1878, entitled "An act to prevent the introduction of contagious or infectious diseases into the United States," provides that "no vessel coming from any foreign port or country where any contagious or infectious disease exists, nor any vessel conveying infectious merchandise, shall enter any port of the United States or pass the boundary line between the United States and any foreign country, except in such manner as may be prescribed under said act."

It having been shown that an epidemic of cholera prevails in Persia, India, and Russia, and that it has also reached Germany, Austria, and France, and in view of the danger which arises through the importation of rags from cholera-infected districts, and of the difficulty through their reshipment at various ports, of accurately determining the localities in which rags are actually gathered; furthermore, because of the prevalence from time to time in various foreign countries of smallpox, scarlet fever, diphtheria, and other contagious diseases liable to be conveyed by rags, therefore it is hereby ordered that on and after September 20, 1892, rags from any foreign port will be refused entry into the United States unless said rags are accompanied by a certificate from the consular officer at the port of shipment to the effect that they have been disinfected in accordance with the methods herein described.

It is also ordered that rags gathered in or shipped from any port or place where cholera is known to prevail in epidemic form be denied entry to the United States absolutely on and after the date of this circular, except such as were then afloat, which must be disinfected on arrival. All previous Department circulars relative to the importation and disinfection of rags conflicting with the provisions of this circular are hereby amended to conform therewith.

For disinfection one of the following methods will be used:

1. Boiling in water not less than one hour, all rags to be unbaled for this purpose.

2. Exposure to steam not less than one hour, the steam to be of a temperature not less than 100° C. (212° F.), nor greater than 115° C. (239° F.).

3. Exposure not less than six hours to sulphurous acid gas made by burning not less than three pounds of roll sulphur to each 1,000 cubic feet of space.

4. Exposure not less than six hours to an atmosphere containing 3 per cent of sulphurous acid gas liberated from its liquid state (liquid sulphur dioxide).

In methods No. 2, No. 3, and No. 4 the rags must be well scattered upon racks, or so arranged that they can from time to time be turned in such a manner that all shall be exposed to the steam or gas.

O. L. SPAULDING,
Acting Secretary.

We were instructed to proceed with all dispatch to Ghent, Belgium, from which place great quantities of rags are shipped annually to the United States, and afterwards visit the principal ports of the Atlantic in Europe from which immigrants and merchandise were coming, for the purpose of ascertaining what preparations had been made by the steamship companies to comply with the instructions contained in the circulars, and what methods were employed by the exporters of rags to carry out the provisions required for the proper disinfection of their merchandise.

For the purpose of ascertaining the methods then in use, upon which the United States authorities relied to show that the merchandise indicated in the circulars had been properly disinfected before being admitted into the United States, we visited the collector of customs in New York on November 27, 1892, and had a conference with him relative to this subject. We were shown a certificate which had just then come into the collector's office with an invoice of rags shipped from London to New York. This certificate set forth that "Dr. J. Higham Hill had superintended the disinfection of the rags baled and marked as per bill of lading." To this certificate was pinned a yellow label which had been attached at the New York quarantine station by one of the officials, permitting the rags to enter. The health officer's name was stamped on the yellow label, and underneath it was written the name of the officer who boarded the ship. There was nothing either upon the certificate or the label, or upon any other document, to show where the rags had been originally gathered, or whether they had been shipped from the

Continent to England and reshipped from there to the United States. The only certification was that the rags had been disinfected in accordance with the circular issued by the U. S. Treasury Department.

We were informed by the collector that rags were being shipped to New York from foreign ports in large quantities. These facts were reported to you November 29, 1892.

December 7, 1892, in accordance with instructions we sailed from New York.

In perfecting arrangements en route for making the examinations required the information in our possession made it advisable for us, upon our arrival in England, to proceed at once to Manchester, as at that place there are several large exporting firms who receive rags from beyond the seas and rebale them for shipment to the United States. We also prepared a list of places from which rags are exported, which was subsequently amended from time to time as we obtained the data, and which may be inserted here. This list does not give the names of all who are engaged in this business, but contains many of the great exporting houses.

RAG EXPORTERS IN GREAT BRITAIN.

Manchester: James Beaumont & Co., William Robinson, G. W. Simpole, Edwin Butterworth & Co., Thomas Griffiths & Co. Liverpool: True & McClelland, Liverpool Paper Stock Company, Thomas Griffiths & Co., Edwin Butterworth & Co. Hull: Young & Sons. Newcastle: Thomas Green, Martin Dempsey. Edinburgh and Leith: Chalmers & Co., Limited; John Barry. Glasgow: Jebb Brothers, William Tait & Co., Thomas Watson. Dundee: J. & W. Smith, Henry Knuck & Co., William Cleghorn, jr. Cardiff: Thomas Jones & Co. Bristol: Harris & Co., F. Clarke & Son. London: A. Cohen & Co., Robert Hough, C. Davidson & Sons, Limited; R. O. Sturgis.

Upon the Continent the principal rag exporters are as follows, although the list is by no means complete, many shippers being located at places which it was impossible for us to visit:

RAG EXPORTERS ON THE CONTINENT.

Belgium.—Ghent: Theophile Vercoutre, E. Lansenbergh & Co., Max Cohn, DeClercq & Co., Alphonse Van der Haege, E. Butterworth & Co., Veuve Emile Cabarteux, Alphonse Biebuyck. Antwerp: J. Hastier, J. L. Van Riel. Roulers: C. Van der Haege, —— Wyckhuyse, Eugene Legein, —— Moerman. Arseele: DeClercq, Mesdack & Co., Max Cohn, DeClercq & Co. Wareghem; Alphonse Blondal. Vilvorde: Heymann & Co. Courtrai: H. Berson Jacques.

France.—Paris: Chapelle Jeune, Fageol-Cosse, Riberolle, Risser, Sivard. Rouen: J. Vachon, ainé; C. Vachon, Camille Borgers, Vassel, père. Beauvais: Borg & Levy. Bordeaux: Urbain Rabaud, F. Capdevielle, succr. Agen: Rozes, ainé. Carcassonne: F. Farge & Cie. Beaucaire: Abadie & Cie. Marseilles: Griozel, J. Ollive, B. Barbier & Cie. Chalon sur Saone: Gabriel Goutte. Dieppe: A. Bourdin. Lille, M. Albert, M. Vincent, Victor Vervaeke.

Spain.—Barcelona: F. Farge & Cie, Pansu Hermanos.

Holland.—Amsterdam: S. E. Cohen & Co., Geb. Gomperts, Cohen & Mok, Veerman & Zonen. Zutphen: David Spanjer. Almelo: J. J. Polak, Gebr. Polak. Oldenzaal: H. M. Cohen.

Germany.—Hamburg: A. Wertheim & Co., H. Bremer. Hanover: Gebr. Salomon, Gebr. Barlsen, J. Jacobson, J. Katzenstein & Son. Bremen: —— Wrissenberg, —— Hagemeyer, —— Aschendorf. Berlin: Lewy & Strick, Gustave Emmanuel. Stettin: H. J. Levy, Berthold Levy, and A. Joseph Levy. Königsberg: Lewin Minkowski, Mr. Lewy. Harburg: Gebr. Salomon.

Denmark.—Copenhagen: Petersen & Albeck, F. F. Olsen.

Italy.—Leghorn: Enrico Grandi, Charles Malencherri, Cerri, Felippi & Co.

Egypt.—Alexandria: Leopold Menshausen, E. Butterworth & Co., S. A. Dollinger. Cairo: Isaac Salaama.

Syria.—Beyrout: Berouti Freres. Smyrna: Moise Mordoh.

Turkey.—Constantinople: —— Suter.

It was subsequently found that the firms, generally large concerns, had sub-buyers, managers of small depots for rags, located in all the principal towns and villages of the several countries visited, with whom they are in constant correspondence and from whom the exporters order the rags forwarded. That the subject of rag gathering may be properly understood, and as much will hereafter be said upon this subject, it seems better to commence with a brief description of the modus operandi; and for this purpose no better place can be found to furnish the data than the city of Paris, though the methods in use there do not differ materially from those used in other large cities.

From the Bureau du Travail, Place de la Republique, it was ascertained that the ragpickers of Paris have recently formed a syndicate to protect themselves from the extortions of the middlemen in this business; hence a tolerably clear idea of numbers, methods of business, etc., could be ascertained. From this place it was learned that there are in the city of Paris alone between 45,000 and 50,000 people who live by collecting refuse (rags, paper, bones, broken glass, bottles, old iron, old shoes, hats, and other material), exclusive of garbage, and that in France nearly one quarter of a million of people are engaged in the rag business.

The ragpicker proper, called by the officials "chiffoniers," and who call themselves "biffins," are not now permitted to live within the fortifications of Paris proper, and nearly all have gone outside, although a few may yet be found in the Rue Mouffetard, district of the Gobelins, in the district of Clichy, and in some other poor districts; but they are being gradually forced out of the old quarters to the suburbs selected for them, of which there are several. One of the principal of these, Gennevilliers, sometimes called "Chiffonville," we visited. The ragpickers constitute a large proportion of the population. They live in small houses, which are generally surrounded by a high wall inclosing a patch of ground, where the rag sorting is done. They form a social caste, their whole life being devoted to the gathering and disposing of rags, etc., and, curiously enough, in many instances the trade descends from father to son, all being apparently satisfied with the conditions of life about them. It is estimated that about 1,200 tons of rags and other refuse, exclusive of garbage, is collected and sorted every day, and its commercial value is between 70,000 and 75,000 francs.

The city of Paris is divided into arbitrary sections by the "biffins," and the business is conducted with some attention to formality, but they make frequent incursions upon a neighbor's domain whenever a good opportunity offers. Nearly all the rag collecting is done between midnight and 8 a.m., for they are not permitted on the streets after 8.30 a.m. On some of the principal streets the "biffin" pays for the privilege of collecting rags, etc., the perquisite going to the concierges in each of the several houses or shops along the street.

The refuse from the houses, shops, restaurants, clothing shops, tailoring and millinery establishments, etc., is brought to the street in boxes, just as it is gathered up from the several establishments. The aristocratic ragpicker (for there are grades among them) owns his cart, and being early on the ground sometimes assists the concierge in carrying the boxes from the several "flats" to the street, where he spreads a large coarse cloth upon the ground, upon which he empties the contents of the boxes. Scattering them over the surface of the cloth, he selects such articles as he wants, puts them into his cart, and leaves the balance for the municipal street carts, which come later. The "biffin's" cart is drawn either by himself or by dogs, which are often used in this business. Some of the more prosperous "biffins" run several carts in the wealthier quarters, gathering from quite an extensive area of territory. Along the streets of the better class, the dust which is swept up in the houses is sifted through a coarse sieve, and anything found of value is saved, even buttons and bits of glass. Whole bottles are washed, and many of them eventually find their way back into the restaurants, drug establishments, etc. The less fortunate ragpickers, and these constitute by far the largest class, start out shortly after midnight or in the very early morning with a large, deep basket strapped to their backs, a sort of policeman's lantern in the left hand, and a stick 2 feet 6 inches long with a curved iron hook at the end. Marching along their "beat," they approach a pile of rubbish on which the light of the lantern is trained. With the hook they pull out every trifle of value to them, and with a rapid, dextrous jerk deposit the article in the basket upon their back, without looking, and which they never miss. Into the basket goes cast-off clothing and underwear, rags of all kinds, many of the filthiest description, some having been used for the foulest purposes, old mop cloths, bandages soiled with blood and pus, old poultices, and even the contents of cuspidors (for the "biffin" gathers cigar stubs and cigarette butts, and he finds a ready market for them), scraps of food, bacon rinds, in fact the entire offscouring of the houses on his "beat," together with the mass of clippings (new cuttings) which come from the overcrowded and ill-conditioned ready-made clothing factories, and the odds and ends from the tailoring and millinery shops of all grades. All this refuse finds lodgment in cart or basket, which, when full, is lugged away to the suburbs, 7 or 8 miles distant.

In his round the ragpicker stops before every house or inhabited building to gather the refuse. Up boulevards, into aristocratic quarters, streets and alleys, around the palace and the hovel, wherever there is a discarded bit of cloth, a scrap of paper, a rag, a bone, or a morsel he can utilize; before the houses of the well or the sick, no matter what disease there is within, whether smallpox, scarlet fever, diphtheria, or other contagious diseases; articles from all these places which have been rejected for any reason go into the ragpicker's basket. While it is forbidden by municipal regulation to sell or give away clothing, cloths, bandages, etc., which have been used for hospital purposes, and which it is provided shall be burned, we ascertained that the thrifty janitors attached to the Paris hospitals generally dispose of all this material to the "biffin," who pays something for them. Hospital cloths and bandages are generally new, and are regarded as a superior quality of rags, commanding higher prices in the market. As his visits are made in the early morning, often before daylight, the transaction is effected and the "biffin" away before anyone knows of the trade. The material having been collected, the "chiffoniers" return to their homes in the suburbs and deposit their merchandise inside the stone walls, where the women and children begin the process of sorting. After the ragpicker has done his work on the streets, the municipal carts gather up the balance of the refuse, and it is drawn out to the suburbs, where the ragpickers live, and there dumped in huge piles. Later in the day little children sit around these piles and pull over every atom, saving all that may have been overlooked by the ragpicker in the early morning. Subsequently these piles of refuse are sold. The women and children sort out the material brought by the men soon after it arrives.

Desiring to see the whole process of rag collecting and sorting, we went to Gennevilliers, situated about 8 miles from the center of Paris, and quite in the country, but connected with Paris by a street railway, while the process of sorting was going on. This place, inhabited by about 400 souls, nearly all ragpickers, presents a busy scene in the earlier hours of the day. The male portion of the community sleep during a part of the day, as they are obliged to leave the suburb for Paris at midnight, and are actively engaged in all quarters of the city during the night. They return to the suburb about 8:30 a. m. The proceeds of the night's work is deposited in the inclosure and the "biffin" retires. If he has a family of children, and many of them have, the children assort the rags during the day, according to their commercial value, into "linens," "whites," which are subdivided into several grades, "colored" rags, "new cuttings," "woolens," and old "bagging," all mixed together until the sorting takes place. In the afternoon the assorted piles are put into sacks and taken to the local merchant, who pays cash for them, and the picker returns home to prepare for the next night's work.

In his rounds the "biffin" leaves nothing which has the slightest value. Old shoes and hats are cleaned and sometimes find their way back into second-class sales shops. Bits of metal, cinders, waste paper, are collected and assorted, each having its own value.

At Gennevilliers everything one sees and hears relates to rags and refuse, and the evidences of this unclean business are to be seen everywhere; the very air is filled with the odor of rags. The inhabitants of this strange village talk freely of their business and of the rag syndicate, which they expect will better their lot by relieving them from the rapacity of the local dealer, the middleman, who forever grinds the face of the poor by beating down prices. Through the syndicate they hope to be able to deal directly with the exporters or manufacturers, taking the middleman's profit to themselves. The men take great interest in local politics, and boast that by their vote they can return "their man" to the Chamber of Deputies. Since they have been compelled to move into the suburbs many of them add to their income by raising chickens and pigs. We were informed that the "prosperous" ragpicker earns from 25 to 30 francs a week, but this sum is far in excess of the average, which is not much more than one-half that, or $3 per week, and they must work steadily to secure this income.

Taking the daily value of the stuff gathered at 72,000 francs and dividing it by the number of pickers in the city, the result to each would be less than 2 francs (38 cents) a day. The children are put to work sorting almost as soon as they are old enough to know the difference between a bone and a rag. We saw many little toddlers sitting around the huge piles raking out the bones and shreds, which for many of them is to constitute the labor of life. These people have their own views of life and of the relations they sustain toward society about them; they take quite an active interest in questions relating to the affairs of France, and are generally sober and industrious; it is an *imperium in imperio;* a little world subsisting upon the refuse swept out of the greater world around them. They have their traditions, folklore, and songs, and as we walked away from the place we heard several young girls from 8 to 12 years old singing a ragpickers' song, the refrain of which was "We are the ragpickers' daughters."

After having visited and inspected the work done in the suburbs, we next went to the local merchant, or middleman. He is also required to carry on his business outside the city of Paris proper; but he gets as close as possible, and many of these merchants are now established along the Boulevard Victor Hugo, immediately under the stone walls of the fortifications. To these merchants, some of whom operate extensively, handling thousands of bales of rags yearly, the "biffin" brings his daily collection, where they are weighed, valued, and paid for. They are then sent upstairs, where they are once more sorted, the linen rags being separated from the cotton and the best white from the poor white, then the common colored from the woolen rags. The "new cuttings" are glanced at, to see that all old rags have been picked out, to make them appear clean. The local merchant buys the old shoes, hats, bones, metal, etc. The stench arising from the putrefying bone piles is simply abominable, and it is strange that the authorities permit such accumulations in a populous street. After the rags are sorted by the middleman they are put into more compact bales for sale to exporters or mills, or where they can find the highest market price. There appear to be no regulations requiring disinfection, and the trade between ragpicker and exporter is under no other supervision than that which is applied to any other business, no special restrictions being placed upon it; or if there are restrictions or regulations they are not enforced.

There is no disinfection; there are no disinfecting rooms nor anything that could be used as such; there is no pretense that it is done, and when the subject of disinfection was mentioned it was regarded by all of our informants as a curious proceeding of which they knew nothing. If there are French laws, either general or municipal, or police regulations requiring the disinfection of rags, the dealers know nothing of them, for we closely questioned several of them while examining their places, and from all received the same replies, that there were no such regulations. This would seem to be the truth, for the wide-open doors through which loaded carts come and go would make inspection easy if demanded, and there was no evidence of concealment.

Here, then, we saw the whole business of rag collecting, from the gutter until the rag found its way into the exporter's hands. We saw the "new cuttings" selected from indescribably filthy piles of rags baled and sent to the United States, where they are admitted under special instructions issued by the Treasury Department, which exempts them from disinfection. Under the trade classification of "new cuttings" they have apparently been regarded as clean, and therefore harmless. The larger exporting establishments have rooms which might be used for disinfecting, but they are operated for other and more profitable purposes.

Foul as are the rags and the rag business in Paris, it is by contrast clean with what we saw in other places, especially Ghent, Rotterdam, Amsterdam, Vilvorde, Hanover, etc. In some of these cities the fetid odors arising from the sweating piles of rags were horribly offensive. Exposed to the rain, mixed with putrefying bones (the latter being imported by shiploads into the United States without disinfection), and contaminated with filth of every description, they are sorted and baled in a manner to be hereafter described.

At Amsterdam, in one of the largest exporting establishments, there were tons of rags and bones mixed in a common pile, which gave forth such a stench that we were driven from the place. We afterwards saw the health officials and called their attention to this condition of affairs, and upon examination they reported that they had no idea matters were so bad. At Vilvorde there is another large exporting establishment as malodorous as the Amsterdam house. We saw but four or five of the establishments visited that were conducted in what might be called a proper manner—that is, having regard to the health of those employed in the place—and even in those the rags were filthy. They can not be otherwise, for these large establishments are the receptacles for the accumulation of rags gathered from all the cities and villages on the Continent. Clothing is often worn as long as it will hold together by many not overzealous in keeping themselves clean, every shred made to do duty somewhere, descending lower and lower in the scale of utility until no longer of use for any purpose; or clothing discarded because it has been worn by those dead of some contagious disease finds its way into the rag house, where it is finally baled for exportation, much of the filthy stuff contaminated by disease germs finding its way into the United States without either fumigation or disinfection.

Having described the usual methods of collecting rags in the cities, and in what condition they reach the exporting houses, we are better prepared to understand the necessity for disinfection.

We arrived in Liverpool at 10 a. m. December 14, 1892, and took the 11 a. m. train the same day for Manchester, where we called upon U. S. Consul W. F. Grinnell, and then visited and inspected the rag warehouse of E. Butterworth & Co., one of the largest exporting establishments in Manchester. We were accompanied by Mr. Arthur C. Hall, who inspects the disinfection of rags at this place, being appointed to do this work by the consul. Mr. Hall is employed regularly at the consul's office and has many duties, so that he can not devote the time necessary to watch the proper disinfection of rags. We reached the Butterworth establishment at about 6 p. m., and saw the rags spread on the racks in the fumigating room. This room is about 31 feet 6 inches by 28 feet, and 9 feet high. On three sides are heavy brick walls, the other wall being formed by a board partition. About 2 feet 6 inches from the floor there is a rack covering the entire space of the room. Four feet above the first rack is a second. The rags are let down from a sorting room above through trapdoors, and are spread from 9 to 10 inches deep, first on the lower rack, then on the upper. When both racks are covered, which generally takes all day, or until about 6 p. m., Mr. Hall visits the disinfecting room, weighs the sulphur (35 to 40 pounds), lights it, and then closes the door, which is supposed to remain closed all night. The sulphurous fumes soon fill the room, so that it is impossible to remain inside. We inspected the rags on the racks, and found them to be as stated above, about 9 inches deep. The sulphur was ignited and the door sealed. Over this room is a second, where precisely the same process is carried on. We arranged to visit the establishment the next morning, and went to the hotel at 8 p. m. In the morning we returned to this establishment and saw the room opened which had been closed in our presence the night before. It was impossible to enter the door or stay near it, owing to the escape of the fumes. The door was then closed and the vents opened to permit the escape of the gas. We went to the upper floor, which had been opened and ventilated earlier in the morning, and from which the disinfected rags were then being removed. We opened the rags which had been spread on the racks in several places and found the fumes in the rags were too pungent to permit one to inhale, showing that the gas had permeated the whole mass. The rags are supposed to remain on the racks in the fumes all night. The vents are opened at 6, and the girls who handle the rags enter the rooms at 8 a. m., clearing the racks for another charge, sending the disinfected rags downstairs, where they are pressed into bales weighing from 700 to 800 pounds. After being baled, Mr. Hall, the inspector, marks on each bale with stencil plate the word "Disinfected," and "Arthur C. Hall."

We were informed that the rags now handled by this firm are gathered in England, local laws prohibiting the importation of rags from countries infected with cholera, whether they have been previously disinfected or not. We learned that the fees paid by Butterworth & Co. for inspecting the disinfection, etc., are 3 shillings sterling per ton. They disinfect now about 8 tons in twenty-four hours, and Mr. Butterworth told us that the total cost of handling and disinfecting rags is about 15 shillings sterling per ton. That is to say, the extra cost to the exporter for disinfection, including fees and all other expenses incidental to the process, is 15 shillings per ton. So that where rags are not disinfected they can be put upon the market at 15 shillings per ton less than those which have been properly disinfected, offering an inducement to unscrupulous dealers to omit disinfection altogether or to do it quickly and improperly.

Learning that the Butterworth Company had another establishment at Liverpool, it was considered best to make an examination of that place before proceeding to Ghent. Accordingly, Dr. Irwin went to Liverpool at 11:30 a. m., December 15. He found that the arrangements for disinfecting there were practically the same as at Manchester, but much more complete and the methods better carried out. At Liverpool the U. S. consul, Mr. Thomas H. Sherman, employs three inspectors, who devote their entire time to superintending the process of disinfection and marking. They are present at every stage of the process, watching each step from the reception of the rags into the disinfecting room until they are baled and branded for exportation. The stencil plate is always in the possession of one of the inspectors, and when not in use it is locked up. This is not the case at Manchester, where it is left in the office of the firm during the time that Mr. Hall is absent. The area of the disinfecting rooms at Liverpool enables them to properly disinfect and pack 7 bales (about 2 tons) per hour. Any excess of this quantity shows that the work has been slighted and improperly done. Our examination at these places indicates that it is better to have an inspector regularly employed at Manchester the same as at Liverpool, the size of the establishments at Manchester making this plan seem the best to secure the proper disinfection of rags, required by Department circular No. 143. It would demand the entire time of at least one man thus employed; and as much of the work necessitates hard labor and is not essentially "scientific," a man of ordinary business capacity could do the work, and would probably do it better than a physician or other skilled person. And we so recommended in our first preliminary report, dated December 21, 1892. In addition to the Butterworths there are at Manchester the following-named dealers in rags: James Beaumont & Co., William Robinson, G. W. Simpole, and Thomas Griffiths & Co.

We learned that most of the dealers here and elsewhere in England are in communication with dealers in Ghent, and as we desired to visit that place unannounced we deferred going to any other establishments until after we should return from the Continent. At the Butterworth place there are 400 girls employed as rag sorters and elsewhere about the establishment. We were told that they had never had a case of anthrax or other disease consequent upon their occupation, and the girls we saw all seemed to be healthy, sturdy people. The rags were moist, and we were told that they were always moist at this season of the year. They took no pains to dampen them or to moisten the walls of the disinfecting room. When this was suggested as making the disinfection more effective, they said that they preferred dry rags, because after baling they were weighed, and during long voyages the rags dried out and lost weight, which fact was sometimes taken to mean, they said, that they had marked the original bale as weighing more than it really did.

Relative to arrangements made by the steamship companies at Liverpool to carry out the provisions of Department circular, requiring the disinfection of personal baggage of immigrants at ports of debarkation, and to ascertain what had been done by them to prevent the introduction of contagious diseases into the United States, we found that the steamship companies at Liverpool have no adequate arrangements for disinfecting baggage should this step become necessary, and, in our judgment, much of it should be disinfected at all times. We were informed that they have an arrangement with a local hospital where small quantities of baggage may be disinfected by steam, but as the apparatus was built to disinfect articles of bedding or clothing belonging to the hospital only, and as it is situated at some distance from the wharves, it may not be at all times available for use by the steamship companies, and it is altogether too small to disinfect the large quantities of baggage arriving at this port. At the best of times the bedding and clothing brought to the ships by emigrants are often filthy, and no one knows how recently some virulent contagion may have contaminated it. It is a well-known fact that infected bedding is especially liable to convey disease germs, and as smallpox is always present in some parts of the world from which we constantly receive immigrants, it would seem to be a matter of justice to the people of the United States that the introduction of bedding should be prevented, or that it should always be thoroughly disinfected before it is put on board ship.

This is a precautionary measure which can not fail to result in good.

We found that the boarding houses where emigrants congregate previous to sailing are under the control of the principal steamship lines. Their agents receive the emigrants at the several railway stations and steamship landings, and conduct them to the boarding houses. They regulate the daily charge for board and lodging, which is very moderate, and they cause them to be inspected by surgeons in their employ, while they remain therein. The boarding houses are licensed according to local regulations, and are supervised by the local authorities, as well as by the steamship companies' officers.

The steamship companies are notified by their subagents in the several countries from which the emigrants come of the sale of the tickets, to whom they are sold, and for what steamship, and they are thus enabled to know the name and from whence each passenger comes, excepting those whose tickets are purchased in the United States, technically called "prepaids," to whom the tickets are sent from the United States. This prepaid passenger comes to the boarding house or steamship office in Liverpool unheralded, not having applied to any European subagent, and must be cared for accordingly. To facilitate the business of inspecting the emigrants as they go on board ship, each one is provided with a ticket, on which is written the name and place of residence, which must be shown as they go on the vessel. If any intending emigrant manifests symptoms of infectious or contagious disease while at the boarding house, or at any time before the ship sails, the person is at once removed to a local hospital for treatment at the ship's expense.

The great majority of emigrants (and they number from 40,000 to 50,000 a year) arrive in Liverpool the day before the ship sails, hence anything like proper inspection is impracticable. The boarding houses are generally clean and well ventilated, the food well cooked and sufficient in quantity, and the accommodations suitable.

Returning to Manchester after the examination at Liverpool, we took the morning train, December 16, for London, and on the morning of the 18th left for Ghent, reaching that place at 7.30 p. m. Next morning we went to see the resident agent of the Butterworths, of Manchester, England, who have another large warehouse at this place. He conducted us through a brick building, formerly a cotton spinning mill. The rags are taken to the top floor, sorted, and dropped from floor to floor into appropriate bins; in the second story is the fumigating room, containing 10,000 cubic feet, in which the superintendent stated that he burned about 27 kilograms of roll sulphur at one time. Through this room there is a passage 3 feet wide, and on each side of the passage are four tiers of racks, the lowest being about 2 feet from the floor, the others about 18 inches above each other. The racks are made of coarse wooden frames, to which is nailed wire netting; the racks are about 6 feet long by 3 feet wide and so arranged that they slide into their resting places. On the wire screens the rags are placed about 9 inches deep, the sulphur is put into several iron pots and set on fire, the room closed tightly, and the rags left in the fumes all night, being removed the next morning. In this room they fumigate about 8 tons of rags at one time. There was a suspicious newness about this disinfecting room, and an entire absence of the odor of sulphurous acid gas, which indicated to us that no sulphur had been recently burned in it; and the boards which had been used to separate this room from the other part were of new lumber, the hammer dents about the nails betraying its very recent construction, while the wire used for the racks was clean and bright, and had never been "bitten" by acid gas. The iron pots in which the roll sulphur stood were not incrusted and did not appear to have been used for the purpose of burning sulphur. Along one side of the fumigating room was a series of bins the height of the room and divided into compartments about 5 feet wide, into which the rags came through openings in the floor overhead; these bins were old, as evidenced by the dust, spiderwebs, and detritus of the establishment, and were in sharp contrast with the newness of the other side of the fumigating room. Afterwards, while in conversation with the American consul, he told us that the Butterworths "disinfected their rags on the floor, this method being said by the inspecting physician to be just as good as though they were fumigated on the racks."

The superintendent informed us that all the rags in this establishment were collected in Belgium, France, and Germany. They are, as a matter of fact, gathered in the small places all over the Continent by local ragpickers and forwarded to exporting establishments by small dealers, packed in what are technically called "loose bales"—that is, unpressed bales or large sacks. They are readily distinguished from bales prepared for export, which are subjected to great pressure and firmly bound by iron hoops. He answered the specific question, "Do you buy rags from Germany now?" by saying, "Yes; the Belgian Government does not interdict them now." This disinfecting room had not been made air-tight; the window sashes were loose in their frames, and there were many broken panes of glass; the cracks between the boards were quite wide, so that we could plainly see through them. All the evidence forced us to the conclusion that this room had never been used for disinfecting purposes as at present arranged, and if sulphur had ever been burned in it the fumes must have escaped immediately through the many large openings. The immense size of this establishment, which was filled with rags on each of the five floors, and the large quantities which were being unloaded from cars which ran up to the warehouse on a spur from the main line of railroad, and were being hoisted into the building, made the small size of this disinfecting room appear ridiculously small. It requires at least 8 by 7 feet on the racks to disinfect one bale of rags. According to this standard it would require more than four times this space to disinfect the rags which they admit is their weekly output, and the superintendent said they were not now fumigating as many rags as formerly. It was apparent that disinfecting was not properly done in this establishment. We went into the basement of the building, where the rags were being baled by hydraulic pressure, and saw an immense number of bales ready for exportation. They were not marked in any way to denote that they had been disinfected.

The superintendent pointed out a large pile which he said was ready to go back to "your country," the contents being old bagging which had been used to bring cotton from the United States, and had been gathered from many cotton spinning establishments in Belgium and Germany. The superintendent said that they had not been disinfected because it was not required by the United States regulations. He also informed us that the company employed a physician of their own choice who superintended the disinfection and that he was paid by the company; he also said that they paid the U. S. consul 5 cents a bale for his certificate of disinfection. In response to our question he said that they employed about 60 girls as sorters, and that none of them had ever been sick or had "sore fingers." Asked whether he knew that rags from hospitals came into the establishment, he replied, "Oh, yes, we can always tell them, because the bandages are new, and the cloths always smell of carbolic acid and there are old poultices among the rags."

We next called upon Mr. John B. Osborn, the U. S. consul at Ghent, and informed him of the object of our visit. He told us in substance that the exporting establishments nominated their own inspecting physicians, and that he approved them. The inspectors in his district were as follows: Dr. Pagaldino, inspector for Van der Haege and Butterworth & Co.; Dr. L. Colson, inspector for E. Lansingbergh & Co.; Mr. St. Reynart, burgomaster at Arseele, inspector for Max Cohn & Co.; Dr. Emil Carlier at Roulers, inspector for C. Van der Haege; Mr. J. Walleart, at Courtrai, inspector for T. H. Vercoutre.

These persons he said were nominated by the firms, and he confirmed the nominations; that they were paid by the rag exporters and received 5 francs per visit; they visited as often as they were sent for. He said his own fee for certification was 5 cents a bale and $2.50 for a "certificate of origin." He informed us that "the firms pretty generally disinfected now, but that some disinfection was done on the floor, for the doctors said that the fumigation was just as good that way as on racks;" he said he did not often visit the rag establishments, some he had never visited; that he had sent copies of all his certificates to the State Department at Washington, and that they had been approved by the Department. That some time in June last he sent out a circular letter to all shippers in his department calling their attention to the requirements of the circular from the Treasury Department relative to the disinfection of rags from Ghent, but that he had not personally visited the establishments to see that Department requirements had been carried out, accepting the certificates of the inspectors as satisfactory evidence that the requirements were carried out. He said he thought there ought to be some uniform method adopted by the U. S. Government which should apply everywhere and not leave the subject of disinfection to the determination of each U. S. consul, as was the case at present.

At 5 o'clock we drove to the establishment of E. Lansingbergh & Co. and requested permission to visit the disinfecting room; we took with us a letter from Consul Osborn requesting that we might be permitted to do so. We were met very politely by Mr. Lansingbergh, who said: "My employés have all gone home for the day; the disinfecting room is very dark and really you could not see anything until morning, when I will show you the whole establishment." We plead short time and pressing duties, and that all we desired to see was the disinfecting room, but he replied very politely that it was "really too dark to see anything," and that they were "not fumigating to-night any way," and "to-morrow you can come and see everything, even see the sulphur lighted if you wish to."

The next morning we visited the establishment, Mr. Lansingbergh conducting us at once to his fumigating room, a brick building 42 feet by 26 and 24 feet from the floor to the peak of the roof; about 6 feet above the floor was a wooden rack made of strips of pine boards about 2 inches wide with about 1 inch space between the edges; on the floor and on the rack the rags were spread about 2 feet deep, and we were told that all arrangements were complete for fumigation. In an iron pot was about 4 pounds of roll sulphur, "the amount usually burned in this room;" there was no evidence of any kind that sulphur had been recently burned in the room. There was an opening in the rear brick wall at least 7 feet high by 6 feet wide which led into another part of this enormous establishment, and in it there were several tons of hoop iron upon which we clambered to look through and beyond into the other part of the warehouse. Everything about the room indicated that the arrangements for disinfection had been prepared for inspection since our interview with Mr. Lansingbergh the previous evening. Mr. Lansingbergh said that he could disinfect from 10 to 15 tons of rags at one time in this room, that this was the only room he used, that his annual output was about 12,000 tons, and that most of them went to the United States.

Taking his highest estimate for disinfecting as 15 tons, which he said was done once in twenty-four hours, and allowing thirty days to a month and twelve months to the year, it would on his own showing result in disinfecting only 5,400 tons per annum, if properly disinfected, which it was impossible to do in this room. Every indication, however, pointed to the conclusion that no disinfection is attempted here at this time, and that the whole matter, as we saw it, was a transparent sham, so thinly veiled as to be insulting to ordinary intelligence and was a clumsy attempt at deception. This is one of the largest establishments in the world, and the immense warehouses filled with bales awaiting shipment showed the extensive business carried on in this place. As at the Butterworth establishment, the railway runs a spur track up to and around the building, and at the date of our visit several cars were being unloaded, the loose bales going into the sorting rooms; the bales already packed and awaiting shipment filled numerous warehouses in the immediate locality. They were not marked in any way to show that they had been disinfected, being stenciled "Belgium," and having the shipper's special mark on them. Mr. Lansingbergh told us that they were all going to the United States and most of them to Boston.

At another smaller establishment to be mentioned later we were told "that Mr. Lansingbergh disinfected the rags from that establishment in his disinfecting room."

After a thorough examination of this establishment we were forced to the opinion that it was a remarkable proceeding for a responsible firm carrying on such an enormous business to attempt such an imposition as they had here. We noticed, as at the Butterworth place, that there were gas pendants in the disinfecting room and that at one of them the gas was burning, but, as above remarked, we had been told on the previous evening that the room was so dark that we could not then inspect it, and this was the special reason given for not admitting us to the room that night. In the office at this place we were shown a proclamation of the British Board of Trade. It stated among other things that on and after August 18, 1892, no rags from Norway, Sweden, Denmark, Russia, or Germany would be permitted to enter Great Britain, but that they might be landed for transshipment to other countries under regulations prescribed by the board of trade, to be quoted later.

Mr. Lansingbergh was especially emphatic in the opinion that disease germs could not be transported in rags, and said in corroboration of his opinion that none of their operatives had ever contracted disease from handling rags, and that, so far as cholera or smallpox is concerned, it would be impossible in any event for them to convey disease, because the regulations of every country required all such rags to be burned at once; then, said he, "clothing from cholera-infected households is washed and used for years by the poor before they finally come to the warehouse."

After finishing the inspection at Mr. Lansingbergh's we went to the establishment of Mr. Alphonse Van der Haege. At this place we were not permitted to enter the office, the proprietor coming out upon the street in front, asking us what we wanted to see. After some consideration he said that he was just going to the bank, and asked us to call again at 3 o'clock (it was now about 11 o'clock). At 3 p. m. we returned and were escorted into his establishment. He told us that he had seen the U. S. consul since our first visit, and had been told by him that our visit was all right, and that he had better admit us. He took us at once to what he called "the fumigating room," which had been filled with rags, both baled and unbaled, and the sulphur already ignited. With handkerchiefs over our nostrils we ran into the room and looked about as long as we were able to stay in, which was long enough to show that numerous large panes of glass were broken out of the window sash through which the fumes escaped. They also found exit through the loosely tiled roof, through an entrance into a large chimney or ventilating shaft. From the outside of the building it looked as though the inside was on fire, so rapidly did the fumes escape. The building used for fumigation was 60 feet long by 20 feet wide and about 24 feet high. In the room there was one tier of racks made of strips of wood and poles about 10 feet from the floor. On this rack there were loose rags piled up from 20 inches to 3 feet high. On the floor beneath there were a good many bales, as well as loose rags almost filling the entire space under the rack. In response to inquiries, Mr. Van der Haege said, "I put about three tons of rags in this room at a time and fumigate every day and all day, leaving the rags on the rack about three hours, sometimes a little longer." He was asked whether the men carried the rags into the fumigating room while the sulphur was burning. He replied, "No; I let the fire out overnight." To close this "fumigating room" a "door" was lifted into place. This "door" was made of old boards recently nailed together, full of cracks so wide that we could plainly see through them into the interior. In the iron pot there was but a handful of sulphur on the charcoal. In short, the deception which this man attempted to practice was shameful, the whole room having evidently been arranged in haste during our absence, between 11 and 3 o'clock. Mr. Van der Haege is one of the large exporters of Ghent, and the statement that he disinfected "three tons of rags at one time" in a building having a capacity of more than 28,000 cubic feet is more ridiculous than the 15 tons mentioned by Mr. Lansingbergh as his daily output from the disinfecting room. At this place also there were spur tracks from the railway running into and about the works; large numbers of bales were being shipped away and others (loose bales) were being hoisted into the sorting rooms. The rags were very foul and dirty, and the interior of the establishment did not have the fairly decent appearance noticed at the others.

We went to the office of Mr. Theophile Vercoutere. This gentleman informed us that he packed no rags in Ghent; that he acted as a commission agent for rags packed and disinfected at Courtrai.

We then went to see the establishment of Veuve Emile Cabarteux, who is carrying on the exporting business established by her late husband. In reply to our questions she said that all the rags packed for exportation by her were fumigated at the establishment of Mr. E. Lansingbergh, above described, that she had no fumigating rooms at her own place, and that Mr. Lansingbergh did this for her because "it was all in the family." She said that she packed and exported rags direct to the United States; that Mr. Lansingbergh employed a physician who inspected the disinfection; that she had nothing to do with that matter and knew nothing about it.

From here we went to see the warehouse of Mr. Max Cohn, another large exporter. He met us very cordially, said he had heard that we were coming, and desired us to visit his place, which is at Arseele, some distance from this city, and he insisted upon accompanying us on Thursday morning. In conversation with Mr. Cohn he declared, as all other dealers here have done with whom we have conversed, that rags do not carry contagion, and that he had never known of a case of contagious disease communicated to any one of his 200 employés during the twenty years he had been in the business. Mr. Cohn showed us a duplicate of an invoice of rags which had been shipped to a Boston firm from Ghent via London in accordance with the regulations prescribed by the British board of trade above referred to, corroborating the statement which had been made to us that rags were shipped from Ghent direct to the United States by way of London, provided they were not permitted to remain on the docks of that city for more than seventy-two hours. He also showed us a letter just received from a party in Boston, who imports many rags, in which the writer states that "rags have been shipped to the United States in violation of our quarantine regulations, and that while the method is risky the profits are so large that he (the writer) was almost tempted to try it, but if caught, and the rags shut out, the losses would more than counterbalance the profits."

In the evening the U. S. consul, Mr. J. B. Osborn, called upon us and during the conversation which ensued he told us that he had had trouble with some of the shippers from Ghent, who had tried to avoid the United States regulations by having their certificates legitimatized at some other consulate; that he had known that rags were shipped from Ghent to the United States via London in violation of the United States regulations, and that he had reported the circumstances to the State Department. He also said that on December 1, 1892, the order forbidding rags to enter Belgium from France was rescinded and at this time there was no prohibition upon them. He said that the bagging used to ship cotton goods from the manufacturing districts of France and Belgium, and which finally found its way into the rag warehouses here and was packed for shipment to the

United States, was, in his judgment, as liable to carry contagion as the rags themselves, and should be as thoroughly disinfected. He informed us that smallpox was a very frequent disease in Ghent and often became epidemic; that a recent outbreak was traced directly to the rags brought from France, but that when the attention of the communal authorities was called to it they ignored the matter. He informed us also that the exportation of rabbit skins is quite large. They are brought to Ghent from the country round about and sent to the hat makers in New York. He said that recently a propaganda had been established by the rag dealers and that a printed form had been sent to every exporter in his consular district asking them to fill out the blank and return, as they intend to publish a pamphlet, which it is said will show that no contagious disease has ever been carried by rags, and that by means of the pamphlet the exporters hope to induce the United States authorities to remove the present restrictions.

Relative to the existence of smallpox in Ghent, Mr. Osborn gave us some important information. He said that it was very common; that he had known of several outbreaks in the city since his residence here. In April last (1892) there were over 100 cases in the city, and that the outbreak occurred among the workmen at the docks, who had been employed in unloading rags which had come from France, where smallpox was prevalent. From these working people it spread to other parts of the city; that a large part of those very rags were rebaled and shipped directly to the United States without disinfection; that most of the enormous quantity of rags received in Ghent were shipped to the United States. The epidemic above referred to lasted for some months. In June of 1892 the epidemic continued, and there had been since the winter previous several hundred cases of smallpox. It is impossible to obtain exact statistical information from the authorities, who try to prevent the truth from being known. One of the prominent newspapers of Ghent, the Journal de Gand, in its issue of March 6, 1892, contained an article which said that "toward the end of the month (February) some cases of smallpox occurred among the workmen employed in unloading rags;" that "a previous outbreak of the disease was known to have resulted from the same cause, appearing at first only in that quarter of the city in which the people lived who unloaded and handled the rags upon the docks."

Mr. Osborn said that one of the rag exporters, who is also the chief official of the local health department, made an affidavit before him (Mr. Osborn) to the effect that all measures were being taken to prevent the spread of the epidemic. Said he: "I do not wish to contradict the gentleman, but I must say that health officers in the United States would not consider of any value the so-called methods employed here to stop the epidemic." He added that, notwithstanding all the rag exporters say about rags never conveying contagion, it is a matter of common knowledge among the citizens of Ghent that the frequent epidemics of smallpox here first appear almost invariably in the quarter of the town where the people live who handle the rags, and that from this center it spreads in other directions. This fact is so well known, said he, that there is a decided prejudice among many people against permitting the rag exporters to continue doing their business within the city limits. He stated that he had sent to the State Department several dispatches embodying the foregoing facts. That the facts were understood and provisions made to guard against the introduction of smallpox into the United States is apparent from the following letter:

TREASURY DEPARTMENT,
Washington, July 2, 1892.

SIR: I am in receipt of your letter of the 29th ultimo requesting that the U. S. consul at Ghent be advised to let further shipment of rags from Ghent come forward without the disinfection which is required by the circular letter of this Department of May 12, 1892. In reply I have to inclose a copy of the Weekly

Abstract of Sanitary Reports, July 1, issued by the Marine-Hospital Bureau, in which is a communication from the consul at Ghent showing that the epidemic of smallpox at Ghent was caused by foreign rags received at that port. It is evident that the foreign rags received at Ghent are rebaled there for shipment to this country.

It was not the intent of the circular of May 12 to limit the disinfection of rags to the period during which smallpox might prevail at Ghent. On the contrary, said disinfection is a permanent requirement similar to that imposed at the port of Marseilles.

Respectfully, yours,

CHAS. FOSTER,
Secretary.

Mr. LEON GOTTEHEIL,
53 Beaver Street, New York.

The annual exportation of rags from Ghent is very large, and the amount of money invested in the business in this vicinity makes it a matter of great importance to the town.

CHOLERA.

Mr. Osborn informed us that there were 35 cases of cholera in Ghent and 24 deaths during the summer of 1892. It was confined exclusively to the lowest class of people, and was probably introduced here from Antwerp by a canal boatman, whose wife and child were the first persons affected by the disease, and both of whom died. He said that it was the general opinion of the citizens that cholera would occur in Ghent during the coming summer, as the authorities had taken no adequate means to prepare for or prevent an epidemic; that certain classes of the poorer people lived in an indescribably filthy condition at all times, and no authoritative action had yet been taken to make them "clean up." They would not do this themselves, but would continue in their filthy state unless the officials compelled them to clean themselves and their premises. Said he: "The streets look clean, but the contents of the cesspools, which are numerous throughout the city, are emptied into the sluggish canals, making them extremely foul, and they often give out an offensive odor."

The following are the blank forms used at this consulate relative to the disinfection and shipping of rags:

AFFIDAVIT OF ORIGIN.

I, ——— ———, of ———, do solemnly and freely make oath that the ——— bales of ——— marked ——— ———, mentioned and described in consular invoice No. ——, and about to be shipped ——— to the port of ———, in the United States, were packed and otherwise prepared for shipment at ———, in the consular district of Ghent, and were neither gathered nor baled at, nor passed through, nor shipped from, any port or place, or any region contiguous thereto, infected with cholera, smallpox, or other infectious disease; and furthermore, that each and every bale of the said shipment is, to the best of ——— knowledge and belief, free from any possibility of infection.

Ghent, ———, 189 .

UNITED STATES CONSULATE AT GHENT.

Sworn to before me, John B. Osborn, consul of the United States at Ghent, this ——— day of ———, 189 .

——— ———,
Consul of the United States.

CERTIFICATE OF INSPECTION.

I, the undersigned, ——— ———, of ———, certify by these presents that I have personally inspected the ——— bales of ——— marked as follows : ——— ———, forwarded by ——— to ———, and I certify that the aforesaid ——— have been well spread upon racks or arranged in such a manner that all have been exposed during at least six hours to sulphurous acid gas, made by burning at least 3 pounds (1.36 kilograms) of roll sulphur for each 1,000 cubic feet (2,832 cubic meters) of space. In consequence, I declare that the aforesaid have been perfectly disinfected according to the method No. 3 prescribed by the circular of the U. S. Treasury of the 19th of August, 1892.

Done at ——— this ——— day of ———, 189 .

——— ———,
Inspector.

UNITED STATES CONSULATE AT GHENT.

Accepted this ——— day of ———, 189 .

——— ———,
Consul of the United States.

ORIGINAL CERTIFICATE OF DISINFECTION.

CONSULATE OF THE UNITED STATES OF AMERICA AT GHENT.

I, John B. Osborn, consul of the United States of America at Ghent, do hereby certify that the ——— bales of ——— marked ——— ———, mentioned and described in consular invoice No. ——, authenticated by me and about to be shipped by ——— from ——— via ——— to the port of ———, in the United States of America, have been thoroughly disinfected at ——— in accordance with method No. ——, as prescribed by the U. S. Treasury regulations of August 19, 1892, concerning the importation of rags into the United States, and that the inspection establishing these facts has been duly performed as per certificates on file at this consulate under my supervision by ———, authorized by me to act as such inspector.

I do further certify that to the best of my knowledge and belief the above-described ——— are now free from any infection.

Witness my hand and seal of office at Ghent this ——— day of ———, 189 .

——— ———,
Consul of the United States.

These certificates accompanied every invoice of rags sent out from Ghent after Circular No. 143, Treasury Department, had been issued.

The inspection made of all the exporting establishments in this city, which have been described above, shows how utterly worthless they are; that no reliance can be placed upon certificates unless the disinfection has been supervised by inspectors who are appointed by and responsible to the U. S. consul, and under such restrictions and regulations as may be established by law to govern the whole matter of disinfection. Thousands of tons of rags have been sent into the United States from the city of Ghent alone, accompanied by certificates of origin and disinfection of which the foregoing are copies, which were gathered no one knows where (as it is impossible for the exporters to know whence they come), and which have never been disinfected in any manner, the plain instructions contained in the Treasury Department's circular having been ignored by the exporters in the most shameful manner, and certificates of disinfection sent with the goods which were fraudulent.

Having ascertained the condition of affairs in Ghent, we sent to the Surgeon-General of the Marine-Hospital Service, on December 21, a report embodying in brief all the facts above given.

December 21 we took the morning train for Courtrai, a small place about 27 miles from Ghent, where there is an establishment for disinfecting and packing rags for exportation. Upon arrival we were received by the proprietor, Mr. Henri Berson Jacques, who, at our request, conducted us to the disinfecting room connected with this establishment. It is a brick building 33 by 19 feet and 13 feet high, and was built especially for this work. It is fitted with three tiers of racks made of iron wire netting about 18 inches above each other. On these racks the rags are spread about 6 inches deep and remain there for thirty minutes, when they are dumped into a pile upon the floor and fresh rags spread on the racks The pile is kept on the floors about six hours, when they are taken out and baled. Mr. Jacques informed us that he burned from 29 to 30 kilograms (about 60 pounds) of sulphur in twenty-four hours, and kept the fumigation going night and day. He says he puts about 400 kilograms of rags on the racks at each charge. The disinfecting room, he said, was built in consequence of an order issued to him by the board of health of Courtrai, and the method of disinfection followed by him was ordered by the same authority, and he is doing the work of disinfecting in compliance with those orders. He said that he shipped about 100 tons of baled rags per week, and that they now go to Horace Dutton, of Boston, by way of London.

We had been informed in Ghent that Mr. Jacques disinfected rags for one T. H. Ver Coutre. On being questioned as to this he replied that he did not disinfect rags for Mr. Ver Coutre or anybody else; that he worked for no one but himself; that he had corresponded with Mr. Ver Coutre upon matters pertaining to their business, but that he had never disinfected any rags for him.

This establishment is the best managed of any that we have so far visited, but does not carry out the instructions contained in Department Circular No. 143, as the quantity of sulphur burned in this large room is entirely inadequate to disinfect the rags, and they are permitted to remain but thirty minutes on the racks instead of six hours. It is but just to say that Mr. Jacques was apparently carrying out in good faith the orders which have been issued to him by the communal authorities of his town and that this method of disinfection was believed by him to be the same in effect as the method required by Circular 143. These rags are admitted to the United States upon certificates of disinfection already quoted (p. 47).

December 22, we went to Arseele, accompanied by Mr. Max Cohn, a member of the firm of Max Cohn, De Clercq & Co., whose disinfecting and packing establishment is located at that place. It is one of the largest establishments of the kind in Belgium, and "is located here," said Mr. Cohn, "because of the lower wages paid to the laborers in the country, and because many of the citizens of Ghent object to rag picking and disinfecting within the city limits. There is a growing prejudice in the minds of the people against the industry there, because of the liability to introduce smallpox in the rags." We were taken at once to the disinfecting room, which is located on the upper floor of a brick building, immediately under the roof. This room is 129 feet long by 40 feet wide and 10 feet high. There was one continuous rack extending over the room about 3 feet above the floor; over this the rags were spread to a depth of 6 inches. The floor was also covered with rags thrown down in heaps. Near the center of the room was a sulphur pot, placed inside a charcoal burner. There was but little sulphur burning in the pot. The fumes did not prevent us from remaining in the room until our examination was completed, but what fumes there were streamed out between the joints of the tiles of the roof and through the numerous broken window panes.

Mr. Cohn stated very frankly that they had not been disinfecting lately, "because it was the holiday season" and they "were going to take an account of stock," and that "the rags he had on hand were going to mills located in Belgium to make blotting paper;" that they had "started the fire to-day merely to show how we disinfect," and made no pretense that they were disinfecting the general output of the establishment. At the date of our visit there were very large piles of baled rags in the warehouses ready for exportation. In answer to our questions they said that the output was at this time 100 tons a week; that the rags came from Belgium and northern France; that they disinfect about 5 tons of rags at one charge and burn 50 kilograms of sulphur in twenty-four hours, which costs here 20 francs for 100 kilograms. They send most of their rags to London houses. The whole establishment is clean and neat contrasted with those in Ghent, and the rooms in which people work are properly ventilated. Mr. Cohn stated that the cost of disinfecting the rags was not much of an item, estimating it at about 5 cents per ton. When asked if he did not take into account the interest on the plant, he replied no, because, said he, "if we do not use the room for that purpose we should use it for some other." Asked whether there was not considerable expense attending the sorting of rags for fumigation, he replied, "No, they must be sorted to comply with the requirements of the trade, and the only item of expense which we could legitimately charge to disinfection would be carrying the rags to the disinfecting rooms, spreading them on the racks, and the cost of the sulphur burned in the process."

Speaking of the general subject of disinfection, Mr. Cohn stated that he had no faith in it whatever, and expressed himself emphatically upon the subject, saying that in his judgment contagion is never carried in rags, and that in his experience of twelve years in the business he had never known one case of sickness to occur among the employés of the establishment which could be attributed to handling rags. He told us that a firm in Berlin was collecting data from all the rag exporters, upon blanks sent out by that firm, to show the experience of each concerning the transmission of disease by rags; that the name of the firm doing this work is Lewy Bros. Our examination at this place convinced us that the process of disinfection, as we witnessed it, was a novelty. Officers and employés ran out of the building to watch the fumes as they came out through the roof and broken windows. The unusual and rather startling appearance of the volume of escaping "steam," as they called it, excited them, and they repeatedly called our attention to the circumstance. There appeared to be no intention to deceive us, but there was a total lack of information on their part as to the methods required by Treasury Circular No. 143. The burgomaster, Mr. St. Reynart, gives the certificate of disinfection upon which the U. S. consul at Ghent relies, that the rags have been disinfected in accordance with Department requirements, and upon which they are forwarded via London to the United States.

Mr. Cohn is the proprietor of two smaller establishments situated at Machelen and Vyngt. He stated that no disinfection is done at either place, the rags being sent to Arseele for that purpose. There is also another establishment for woolen rags at Waereghem, but they are not now shipped to the United States because of the duty on them.

At all of the rag establishments which we have visited thus far we saw what are called in the trade "new cuttings," pieces of new cloth coming from tailoring establishments and other places where new clothing is made up, mixed with the filthiest rags, which find their way into the sorting rooms and are there separated in accordance with trade requirements established by the rag exporters, who arrange the several grades of "new cuttings," "linens," "white and colored rags," through a descending scale, which includes the odds and ends picked up from gutter and ditch, including flax waste, old rope, and old bagging.

December 23, took the 5:30 train to Roulers, at which place we arrived at 11:30, and went to the establishment of Mr. Constant Van der Haege, the largest warehouse in Belgium and said to be one of the largest on the Continent. It is a brick structure built especially for this purpose. At present they employ 200 women sorters and a complement of other people. There are two disinfecting chambers, the main room being 20 feet long, 18 feet wide, and 12 feet high, containing 4 tiers of racks about 2 feet 6 inches above each other, on which the rags are spread about 3 inches deep, and where they remain for six hours before the charge is withdrawn and a new one introduced. About 5 tons of rags are disinfected at one time; the smaller room, similarly arranged, disinfects 3 tons at a time. Both rooms are practically air-tight; the joints about the doors are calked to prevent the escape of the fumes. The sulphur in each room is burned in an iron pot, about 16 pounds being consumed each day. This establishment carries out the fumigating process, if it is always as thorough as we saw it, in a way that leaves nothing to be desired, and is the only establishment so far visited where efficiency and thoroughness characterize the process of disinfection.

We met here the inspector, Dr. Emil Carlier, who told us that he visited the establishment twice every day, and he appeared to be thoroughly familiar with it.

At this time the weekly output of rags is 150 tons, but the proprietors informed us that if the market required it they could easily double this quantity. The rags go to the United States by way of London, the great bulk being consigned to Train, Smith & Co., of Boston.

Mr. Van der Haege said that he had rarely less than 3,000,000 pounds of rags on hand and that they are of all kinds known to the trade, from best "white linens," "white cotton," and all grades of colored rags, "new cuttings," "flax waste," "old bagging," and the heterogeneous mass which finds its way into such places.

The sorting rooms, and indeed the whole establishment, seems admirably adapted to the purposes for which it is used. There is good ventilation in every part, and if there is such an anomaly as a clean rag sorting establishment, it is to be found here. Dr. Carlier, the inspector, said that he had been employed by Mr. Van der Haege for many years, that he attended all his working people when ill, and that he had never known of a case of contagious disease among the employés of the establishment which could be attributed to sorting or handling the rags, and that he had never seen a case of anthrax among them; he said that every person employed about the establishment was vaccinated before going to work. Upon inquiring why they did this if there was no danger of contagion being communicated by means of the rags, the doctor hesitated some time, and finally replied, "It is done because we consider it a good sanitary measure." Both Mr. Van der Haege and Dr. Carlier said that disinfection was carried out by them as thoroughly as they knew how to do it, and our inspection of the establishment and of the method which we saw, confirmed their statement.

They do not disinfect "new cuttings," "flax waste" or "old bagging" as they say it is not required by the Treasury regulations. although all rags come to the warehouse mixed together in loose bales from the local dealers. We were told that the rags came mainly from Belgium, a very few from the north of France. One might infer from the information given by the several proprietors of these establishments in Belgium, that the staple product of this country is rags. The circumstance that all rags in this consular district are said to come from Belgium, naturally excited astonishment, and in response to questions on this subject, Mr. Van der Haege stated that he thought most of them came from Belgium because it would not pay to ship rags from a great distance, as "the profits are small." Where the rags actually come from is a matter of conjecture, and there is no evidence whatever to show that they are not gathered in Germany, France, or Russia, and our subsequent investigations showed that the rags forwarded to these very establishments were gathered in each and all of those countries.

The exporter does not stop to inquire, nor does he want to know, from what part of the world the rags come; he is simply interested in filling his orders. The only element to be considered is the one of freight charges, and as canals are common and run for long distances in all directions in this country, and as railway freight rates are low, this is not so important a matter as it is in other countries. As we were about to take our leave, Mr. Van der Haege said that he was earnestly endeavoring to comply with the Department regulations, but that he feared other dealers might not carry out the instructions contained in Department circular No. 143, and thus involve him in trouble with all the rest; and our investigations demonstrated that his fears, if not based upon actual knowledge, were remarkably shrewd opinions. That the margin of profits is fairly good in this business is made apparent by the circumstances that the dealers in Ghent and vicinity are all wealthy men; the enormous quantity of rags which we saw in and being received by the several establishments is an indication at least that the collectors and subdealers throughout the country are by no means inactive; and the fact that we saw them taken from both boat and railway car, in the loose bales, is an indication that they come from considerable distance.

The great anxiety manifested by all the exporters as to what the United States may do relative to the total suspension of the importation of rags is also an indication that there is a margin of profit in the business, which they are loath to give up.

There is another warehouse at Roulers, that of Eugene Legein Moerman; he was not an exporter, sending all his rags to local paper mills, and he has no disinfecting establishment.

The rag business in Belgium has grown to be enormous, amounting to millions of dollars annually. It has become a central position for the business because of its contiguity to France, Holland, Germany, and Russia. The numerous canals and railroads afford ample opportunity for transportation, and as they all converge at Ghent it is a natural depot for the large exporting houses. Labor is extremely low; the men who work at these places receive an average of 1 franc per day (19 cents), and the women and children, of whom great numbers are employed, receive from 8 to 14 cents per day. Out of this sum they board and lodge themselves, yet competition in labor is so great that even at these starvation rates there is active demand for every place which becomes vacant.

With the exception of the Van der Haege establishment at Roulers, the methods of disinfection thus far seen are carried out in a manner that is useless. In most places it was done to deceive us, and the efforts can only be characterized as stupid and bungling.

There is no supervision of the inspectors by the U. S. consul or by anyone acting in his behalf; the certificates of disinfection are sent by the inspectors (who are appointed and paid by the proprietors of the warehouses) to the U. S. consul, who accepts them, and millions of pounds of rags go to the United States marked "Disinfected" which have never been near a disinfecting chamber.

Our investigations clearly establish one point: Disinfection to be effective must be applied to all the articles handled at the rag warehouses, whether called "linens," "white" or "colored rags," "new clippings," "flax waste," "old bagging," or any other grade known to the trade, for one may carry the disease germs as readily as the other, and nothing short of the complete disinfection of the whole can be of any value. To insure its thorough performance, the regulations prescribed by the Treasury Department must be carried out under the supervision of officials appointed and paid by the Government of the United States, who should be made responsible for the proper performance of their duties to the U. S. consul, under such regulations and safeguards as will insure the proper performance of the work.

Having completed our investigations at this point, we returned to London on the 1st of January, 1893, and at once called upon U. S. Consul-General New, who gave us a letter of introduction to the rag exporters in London, one of the largest being A. Cohen & Co.

We called at the office of Mr. Cohen, which is situated at some distance from the warehouse. We asked permission to visit his disinfecting rooms, but our request was answered by a variety of excuses, and a decided desire on the part of Mr. Cohen to make an appointment for some other day. After consultation with other members of the establishment Mr. Cohen said that it would be impossible for him to go just then, but if we would return in an hour or two he would go with us. At the end of an hour we returned, and, accompanied by Mr. Cohen and his brother, we went to the warehouse, which is located on the banks of the Thames River, near Southwark Bridge. After some delays we were slowly conducted through the large establishment to the upper floor and the door opened into the disinfecting room. The fires in the iron pots, on which the sulphur had been sprinkled, had just been lighted, so that the sulphur fumes had not commenced to rise, and we were thus enabled to remain in the room as long as we pleased.

The room is about 30 feet long by 16 feet wide by 10 feet high; in it were four tiers of iron racks about 2 feet above each other, the lowest rack being perhaps 3 feet from the floor. The floor was covered with piles of rags, and they were placed on the racks so deep that at first it appeared as though a continuous pile of rags extended from the floor to the top of the room. In attempting to separate the rags at the edge of one of the racks, so as to examine its construction, we found the rags packed so solidly that they could not be moved. The man sent to assist us gave a vigorous pull at the bunch, and a full bale of rags, which had been opened at its edge and the sacking turned back so as to expose the rags, rolled from the rack upon the floor. We then attempted to raise the rags from the edges of the other racks, but they were all packed too solidly to admit of movement.

When we met Mr. Cohen in his office he told us that it was useless to go to the warehouse that day, because there was no disinfection being done and he knew the sulphur had not been lighted; that the employés were all away, and the place would be locked up so that we could not gain admission until 2 o'clock.

We told Mr. Cohen that we were glad the sulphur had not been lighted, because it would give us an opportunity to make a more thorough examination of his disinfecting chamber, and we requested him to send word to the establishment that the sulphur fires might not be lighted until after we had completed our examination, which he said he had done. In view of all these circumstances we can but characterize the action of Mr. Cohen as an attempt to prevent the examination we had requested. Mr. Cohen assured us that all the rags in the establishment had been gathered in England; that they were not permitted to receive rags at this time from any place outside of England. Like all the other dealers, he stated that he had never known a case of contagious disease to occur among the employés which could be attributed to handling or sorting the rags in the forty years he had been in the business, and that he did not consider disinfection to be of any value. If all rags were to be "disinfected" as they are at present in this establishment, we could unhesitatingly reiterate his opinion.

From Mr. Cohen we could get no definite information concerning the number of bales he shipped to the United States, the number of his employés, or the quantity of sulphur which he burned in his disinfecting chamber. His answers to our questions were all vague and indefinite. The establishment is a very large one, and we saw great numbers of "loose bales" being taken into the sorting rooms, and the pressed bales, intended for exportation, going out. In the lower part of the building there was an immense quantity of bales awaiting shipment, upon which there were no marks or brands and no certificate of any kind. Mr. Cohen told us that there was no distinguishing mark upon the bales to show whether they had been disinfected or not, and that he himself could not tell.

Prior to visiting this warehouse the consul-general had furnished us with the blank forms he had caused to be printed, and which were sent with each invoice of rags to the United States. Among them is one which is signed by the physician employed by the consul to inspect the disinfection. These certificates are signed "J. Higham Hill, M. D., sanitary inspector at London, England, for the United States of America." We were told by the consul that this form was filled out and attached to each bale of rags, under the immediate supervision of Dr. Hill, and that it is upon this certificate that the quarantine officers at ports in the United States permitted the invoices of rags to enter the country, and it was one of these certificates which Dr. Kempster saw on the 26th of November in the office of the collector at the port of New York.

In the office at Mr. Cohen's rag warehouse we saw (January 2, 1893) one of these certificates lying upon the desk, signed "J. Higham Hill" and dated "December 29, 1892." The space for "No. or mark" of bale being left blank, it was only necessary to fill in the particular number required and place the certificate on the bale, which of course could be done by anyone. We were informed by Consul-General New that Dr. Hill attended exclusively to disinfection and that he made out all the necessary certificates; that the doctor furnished the form for the blanks (see below), and that upon them he, the consul, issued the invoice. The consular fee for certificates of disinfection is 10 pence per bale. Consul New informed us that he had been told that many of the rags at the Cohen and other establishments were disinfected upon the floor of the room; that this method was believed to be as efficacious as though they had been placed on racks. He also told us that he had information which he believed to be reliable that there was an organized plan among the exporters and shippers to introduce rags into the United States in total disregard of the Treasury regulations, confirming statements made to us while pursuing our investigations in Ghent; and Consul New gave us some valuable information as to where he thought some of this underhand work was going on. We subsequently investigated this matter and found that the consul had not been misinformed.

Consul-General New stated that the regulations concerning the importation of rags into the United States were most unsatisfactory; it was a frequent occurrence that rag exporters brought cablegrams for him to read which they had received from their agents in the United States (one of which he showed us) that contained information concerning new regulations made by the Treasury Department of which he had no other knowledge. The cablegram he showed us stated, among other things, that the shipment of rags from Ghent had been stopped by order of the Treasury Department. He said he had no official information of the fact, and that this cablegram was all he knew about it. He was therefore unable to advise those dealers who had a shipload of rags from Ghent waiting to go forward whether they would be permitted to land in the United States or not.

The following are the blank forms in use at the consulate in London, England:

No. ——
No. of invoice ——

CERTIFICATE OF SANITARY INSPECTOR.

I, Joseph Higham Hill, M. D., sanitary inspector at London, England, for the United States of America, do hereby certify that the rags mentioned in the invoice hereto annexed, consisting of ——— bales, marked ——— ———, and bearing my certificate, have been disinfected under my supervision in accordance with the process No. 3, prescribed in circular No. 143, of the U. S. Treasury Department, of August 19, 1892.

Attest: ——— ———,
Sanitary Inspector, London, England.
LONDON, ENGLAND, ———, 189 .

Consulate-General of the United States of America,
London.

I, Francis W. Frigout, do hereby certify that the above is the true and genuine signature of Joseph Higham Hill, M. D., and that he was, on the date of signing the foregoing certificate, authorized to superintend the disinfection of rags intended for shipment to the United States of America from the port of London.

Dated at London, England, this ——— day of ——— 189 .

In testimony whereof, I have hereunto set my hand and affixed the seal of the consul-general, at London, this day and year next above written.

——— ———,
Deputy Consul-General.

Consulate-General of the United States of America,
London, England.

The rags contained in this bale marked or numbered ——— have been duly disinfected under my supervision, in accordance with process No. 3.

——— ———, M. D.,
Sanitary Inspector.

Label No. ——.

NOTICE TO SHIPPERS.

Consulate-General of the United States of America,
London.

All rags, paper stock, bagging, feathers, raw hides, hair, wool, fibers, or other substances likely to carry infection must, in all cases, be accompanied by certificate of origin or disinfection, declared to or certified at this consulate-general.

Forms for above declaration supplied on application.

[To be furnished in duplicate.]

Kingdom of Great Britain and Ireland,
City of London, England.

I, [here insert all names of deponent in full], a partner in the firm of Messrs. [name of firm], of [full address], London, England, do solemnly and sincerely declare that the following goods, viz: [Description of goods with marks and

To be used for goods collected abroad.

numbers of bales or packages] shipped by steamship ——— to ———, were imported from ———, per steamship [name of import vessel] to [port]: that at the time of shipment no cholera or other contagious disease existed in the district from which these goods came or passed through in transit, and moreover the steamship [name of import vessel], which steamer carried the goods, received a clean bill of health on clearing outwards.

OR [this paragraph to be stricken out if former paragraph is used or vice versa]

To be used for goods collected in United Kingdom.

shipped per steamer [name of steamer] to [port of transshipment], for account of M. [name of merchant or firm on whose account goods are shipped] of [place of residence of above], have been collected in [district where goods were collected], where there was no cholera or other epidemic prevailing at the time of shipment. [Any further facts which deponent deems necessary to insert.]

And I make this solemn declaration, conscientiously believing the same to be true, and by virtue of the statutory declarations act, 1835.

Declared at No. 12 St. Helens place, in the city of London, this —— day of [fill in date when paper left at U. S. consulate], 189 , before me, a commissioner to administer oaths in the supreme court of judicature in England. [Usual signature of deponent, not that of his firm.]

CONSULATE-GENERAL OF THE UNITED STATES OF AMERICA,
London.

I, Francis W. Frigout, deputy consul-general of the United States of America at London, England, do hereby certify to all whom it may concern that Thomas Hewett, before whom the above declaration was made, as appears by his signature thereto, is a commissioner to administer oaths in the supreme court of judicature in England, practicing in London, and that to all acts so signed full faith and credit are and ought to be given in judicature and thereout.

In testimony whereof I have hereunto set my hand and affixed my official seal, at London, England, this —— day of [fill in date when left at U. S. consulate], 189 .

—— ——,
Deputy Consul-General.

January 3, called at the United States legation and requested Mr. White, chargé d'affaires, to procure for us all documents and orders which had been issued by the British Government relative to the introduction of rags into the United Kingdom, and any regulations which may have been issued by the board of trade, or the health boards, concerning the importation or exportation of rags; also, such documents as may have been issued by the British Government relative to quarantine made with reference to the present epidemic of cholera.

The next day we received from the legation copies of the orders and regulations requested, from which we make the following extracts.

The first in order is dated July 11, 1892, and is directed "To all port sanitary authorities, to all urban and sanitary authorities, to all medical officers of health of the sanitary authorities aforesaid, to all officers of customs, to all masters of ships, and to all others whom it may concern:

"Whereas cases of an infectious disease alleged to be cholera now exist in certain parts of France, and it is expedient that regulations should be made as hereinafter mentioned with reference to ships having on board bales of rags from that country;

"And whereas the commissioners of Her Majesty's customs have signified their consent to the regulations herein contained so far as the same apply to the officers of customs:

"Now, therefore, we, the local government board, do by this our order and in exercise of the power conferred on us by section 130 of the public health act, 1875, by the public health act, 1889, by section 113 of the public health (London) act, 1891, and every other power enabling us in this behalf to make the following regulations and declare that they shall be enforced and executed by the authority or authorities hereinafter specified. [Here follows a long statement defining the above-mentioned authorities.]

"ART. 2. From and after the 12th day of July, 1892, and until we shall by order otherwise direct, no rags from France shall be delivered overside except for the purpose of export, nor landed in any port or place in England or Wales.

"ART. 3. If any rags shall be delivered overside or landed in contravention of this order they shall, unless forthwith exported, be destroyed by the person having control over the same with such precautions as may be directed by the medical officer of health or the sanitary authority within whose jurisdiction or district the same may be found.

"ART. 4. All masters of ships, consignees, and other persons having control over any rags prohibited under this order from being delivered overside, except for the purpose of export or landed, are required to obey these regulations.

"ART. 5. All officers of customs are empowered to prevent the delivery overside or landing of rags in contravention of this order.

"ART. 6. It shall be the duty of the sanitary authority to take proceedings against the masters of ships, consignees, or other persons having control over any rags who shall willfully neglect or refuse to obey or carry out, or shall obstruct the execution of any of these regulations.

"Given under the seal of office of the local government board this 11th day of July, 1892.

"CHAS. T. RITCHIE, *President.*
"S. B. PROVIS, *Assistant Secretary.*

"Notice.—The public act, 1875, provides by section 130 that any person willfully neglecting or refusing to obey or carry out or obstructing the execution of any regulation made under that section shall be liable to a penalty not exceeding £50."

Under date of 13th of July, 1892, another regulation was issued precisely similar in form to the foregoing, article 2 of which is as follows:

"From and after the 15th day of July, 1892, and until we shall by order otherwise direct, no rags from any port on the Black Sea, or the Sea of Azov, whether in Russia, Roumania, Bulgaria, or Turkey, or from any other port of Turkey in Asia, shall be delivered overside, except for the purpose of export, nor landed in any port or place in England or Wales."

The balance of this order is precisely the same as that of the foregoing. On the 11th of August, 1892, a similar order was issued, of which article 2 is as follows:

"From and after the 19th day of August, 1892, and until we shall by order otherwise direct, no rags, bedding, or disused or filthy clothing, whether belonging to emigrants or otherwise, from any foreign port in Europe north of Dunkirk, other than ports of Norway, Sweden, and Denmark, shall be delivered overside except for the purpose of export, nor landed in any port or place in England or Wales."

Article 3 provides that "any of such goods landed in contravention of this order, unless forthwith exported, shall be destroyed."

The preceding orders were supplemented by another issue December 14, 1892, similar to the foregoing, but more explicit, from which the following extract is made:

"ARTICLE 1. In each of the above-cited orders the term 'rags' shall mean only such rags of whatever material within the meaning of the term 'rags' as used in the official custom import list, as—

"1. Are dirty or mixed with dust; or

"2. Are articles of clothing or bedding or have formed part of any article of clothing or bedding and have not been remanufactured or partly remanufactured; or

"3. Are packed with any rags in (1) or (2).

"ART. 2. In article 2 of the above-cited order, dated the 11th day of August, 1892, the word 'dirty' shall be inserted before the word 'bedding,' so that subject to this order the said article shall provide that until we shall by order otherwise direct, no rags, dirty bedding, or disused or filthy clothing, whether belonging to emigrants or otherwise, from any foreign port of Europe north of Dunkirk other than ports of Norway, Sweden, and Denmark, shall be delivered overside except for the purpose of export, nor landed in any port nor place in England or Wales.

"ART. 3. Each of the above-cited orders shall be amended so that—

"1. Rags, bedding, or clothing prohibited by any of the said orders from being either delivered overside, except for the purpose of export, or landed, may be delivered overside or landed for the purpose of disinfection.

"2. Any such rags, clothing, or bedding delivered overside or landed for the purpose of disinfection shall not be taken out of the custody of the officers of customs until the same shall have been disinfected by and at the cost of the consignee or other person having control over the same, by means of steam under pressure in such manner as to secure the exposure of every part of the bale, package, or parcel, or of every article, to a temperature of not less than 212°, nor until the medical officer of health shall have given a certificate to an officer of customs as to such disinfection, which certificate shall be in the following form:

"Ports of ——.

"I hereby certify that the (rags or bedding or clothing) delivered overside or landed at this port from the ship —— of or from —— and consigned to —— and distinguished by the following marks and numbers —— have been disinfected at this port in accordance with the provisons of article 3 of the order of the local government board, dated the 14th of December, 1892.

"—— ——,

"*Medical Officer of Health.*

"Date ——, 189 ."

Article 4 provides that "all expenses incurred in watching the goods or for disinfection shall be paid by the person having the control of the same."

Article 5 provides that "any such rags, bedding, or clothing landed for the purpose of disinfection shall be destroyed if they have not been disinfected within seventy-two hours from the time of landing."

January 5, 1893, we met by appointment several gentlemen, who gave us valuable information concerning the places where we could see the transshipment of rags which had come from the Continent, and which were to be sent to the United States in violation of the U. S. Treasury regulations.

January 6 we visited the places indicated and found the work going on as reported at the wharves along the banks of the Thames not far from Gravesend. The parties engaged in this business told us that rags had been coming steadily from the Continent, and largely from Belgium, since the time when orders were issued by the United States authorities prohibiting the introduction of rags from the Continent into the United States; that the transshipment had been active all through the autumn months. The reasons why rags are sent to London are because English rags are not prohibited from landing in ports of the United States, and because the freight rates from London to the United States are lower than from continental ports. The steamships engaged in this trade, as a rule, take only a limited quantity of rags, because of their bulk. One of the shippers said the rags which would pay them only a shilling for freight would occupy the space for which heavier freight would pay 25 shillings; therefore they restricted themselves as to the quantity they carry.

Ships load with all the ordinary freight they can get and fill up the balance of space with baled rags. This shipper informed us that they did not wish to carry rags against United States regulations, but so long as other lines did so they felt themselves forced to do it; that they would be very glad if the whole business could be stopped. He said that the rag exporters made sport of the regulations of the United States concerning the disinfection of rags, and they characterized "the whole business as a farce; that all they had to do is to take an inspector into the establishment, show him a pile of rags which they said had been disinfected, and receive a certificate from him." He furthermore said, "It is generally understood by the shippers that if a party desires to get rags into America he must make himself solid with the custom-house authorities where the rags are going, and then there would be no difficulty in landing them; that the whole thing was largely a matter of political influence." Our informant stated further that "all rags shipped from England to America at this time are provided with certificates of disinfection, but these certificates are not at all difficult to obtain." He said, furthermore, that "the recent order of the Treasury Department, dated December 27, 1892, the full text of which had been cabled by the rag dealers in America to exporters in London, would so increase the price of rags that they would come in larger quantities from the Continent to England in order to supply the demand;" that "the quantity of rags going through England from the Continent varied greatly; just at the present time there was a lull in the business." This conversation and the examinations consequent, which lasted several hours, corroborated what we had heard at Ghent and elsewhere. The shipper had no hesitation whatever in proclaiming that they were all carrying the rags in contravention of the United States regulations, but that it was done openly and aboveboard and in accordance with the British regulations previously quoted.

January 7, called upon the U. S. minister, Robert Lincoln, and made him acquainted with the general results of our investigation in London; also called upon Consul-General New and informed him of the real condition of affairs at Mr. Cohen's warehouse and of the transshipment of rags to the United States. A summary of all our investigations was written out and forwarded to the Surgeon-General of the Marine-Hospital Service on January 8, 1893, and we also sent a cablegram informing him of the fact that British laws permitted continental rags to be landed for reshipment to America, but forbade them to enter the British dominions.

January 9, 1893, we left London for Brussels, reaching that place at 7 o'clock p. m., and the next morning called upon U. S. Minister Terrell and requested him to procure for us from the Belgium Government any orders, regulations, or documents of any kind concerning the shipment of rags into or out of the Kingdom; also any documents relating to the present epidemic of cholera which the Government may have issued. (We have received no documents of any kind in response to this request.) We afterwards called on U. S. Consul Roosevelt, who informed us that a deputation of rag exporters from Ghent visited him one day last week and told him that the U. S. Government had sent some inspectors to Ghent to investigate the subject of disinfection of rags; that they were afraid their rags would not be admitted, and wanted him to use his influence to help secure the admission of their rags into the United States, which he informed them he could not do.

He told us that the rag-exporting establishments at Vilvorde, near Brussels, had recently made two shipments of rags directly to America that he knew of; that his deputy consul had been to Vilvorde to examine the methods of disinfection in use at that place, and had reported that it was not satisfactory. He told us that a week ago Mr. Minne, an agent of West & Penrose, shippers of rags, called upon him, and stated that he had a ship's cargo of rags coming to Belgium direct from Russia, but that the ship was delayed by ice, and he desired to know whether he could not then procure an invoice from him so as to send them immediately to the United States. Mr. Roosevelt told him of the recent regulations which prevented the introduction of rags into the United States from Belgium, and that he could do nothing for him. He said, these rags are now afloat somewhere and will probably go to London. The deputy consul told us that he had been to Vilvorde for the purpose of examining the method of disinfection in use at that place, but that at the time of his visit the sulphur had been ignited in the disinfecting chamber, and he was told by the proprietor that it would be impossible for him to go in. He did, however, walk into the room and satisfied himself that disinfection was not being carried out in accordance with Department circular No. 143.

CHOLERA.

Referring to the subject of cholera, Mr. Roosevelt said that in a suburb of Brussels named Molenbeek there had been a number of cases of cholera during the autumn, and that they had occasional deaths from this disease there at this time; this quarter of the city is generally spoken of as a "pest hole;" it is inhabited by the lowest class of people, principally canal men; that the first case of cholera which occurred was a canal boatman who came from Antwerp. Mr. Roosevelt said there is a general feeling of uneasiness among the people of Brussels, in which the sanitary authorities participate, for they fear there will be an outbreak of cholera during the spring or early summer. Their opinions are based upon the circumstance that the disease has continued through the winter up to the present time; furthermore, that there are a number of small places situated within the suburbs of the city in which there are occasional attacks of cholera and some deaths at this time. The weekly statistics issued by the sanitary authorities show that deaths from diarrhea and enteritis are now high; the official report for the week ending January 7, 1893, shows 2 deaths from cholera and 18 deaths from diarrhea and enteritis.

The water supply of Brussels is excellent, being brought to the city from springs which are situated in a forest about 18 miles distant; the city itself is scrupulously clean, and the authorities are taking extraordinary precautions to keep it so.

January 11, took the morning train to Vilvorde and went to the rag establishment of Heymann & Co., which is the only place of the kind near Brussels. It is a very large brick building, and at the date of our visit we were told that more than 2,000,000 pounds of rags were baled and awaiting shipment to the United States.

The proprietor said that for the present the direct shipment of rags had been stopped. At the date of our visit the outside of this large building was completely covered with rags, apparently old clothes, which were hung to dry or air on pegs driven into the walls. It was a filthy lot of stuff, and the odor from the mass was sickening. We asked to be shown into the disinfecting room, and were conducted into one arm of the building about 200 feet long, 40 feet wide, and 20 feet high. There were numerous large windows along one side; on the other side there were bins, each about 6 feet wide and running up nearly to the roof.

The proprietor informed us that they filled the bins with rags, then ignited the sulphur in three iron pots placed on the floor. The perfect sincerity of the statements made by the proprietor convinced us that he had not the slightest idea of what was meant by disinfection, and he said that they had never heard of the circular issued by the United States. This "disinfecting" room opened into the other branches of this enormous establishment by means of large brick archways. Many panes of glass were broken out of the windows along the front of the building, and the roof of slate, joined in the usual style, made it impossible to disinfect rags in this room even if they had racks properly constructed, yet the rags shipped from this place are sent to the United States with a certificate that they have been "disinfected according to method No. 3 prescribed in Department circular No. 143," and are freely admitted at any port to which they may be consigned. It is due to say that there was no desire on the part of the proprietor to conceal anything from us about the establishment, and he explained to us with evident satisfaction how large a quantity he could fumigate at one time by filling all the bins. He told us that he shipped to the United States more than 1,000 tons a year, the last shipment having been sent fourteen days ago.

In response to our inquiry he stated that all the rags he received were gathered in Belgium, and the usual response was made that he had never known a case of contagious disease or of a sore finger (anthrax) to occur among his employés; for some time past, he said, "I vaccinate everybody who comes to work for me." The whole warehouse was saturated with a horribly pungent stench; at no other establishment have we seen greater necessity for thorough disinfection or such an absence of means to do it.

The village of Vilvorde is very small and the rags received there must come into it by rail, as it is not near a canal or river, and the immense stock handled can not be gathered in the immediate neighborhood.

January 13 we left Brussels for Antwerp, and called upon the U. S. consul, G. F. Lincoln, who told us that there were but two large rag-exporting establishments in his consular district. After receiving the Department order requiring disinfection of rags, his deputy visited these places to see how the work was done. Mr. Sherman, the deputy, explained to us that their method was to open the bales, pile the rags in heaps on the floor, and burn some sulphur in an iron pot, allowing the rags to remain for six hours in the fumes, after which they were rebaled and shipped to the United States. During the recent cholera epidemic the municipal authorities forbade the introduction of rags into Antwerp and afterwards they ordered that all rags coming into the city must be disinfected. Rags are not exported to the United States at present, but they are shipped to other places, most of them to England.

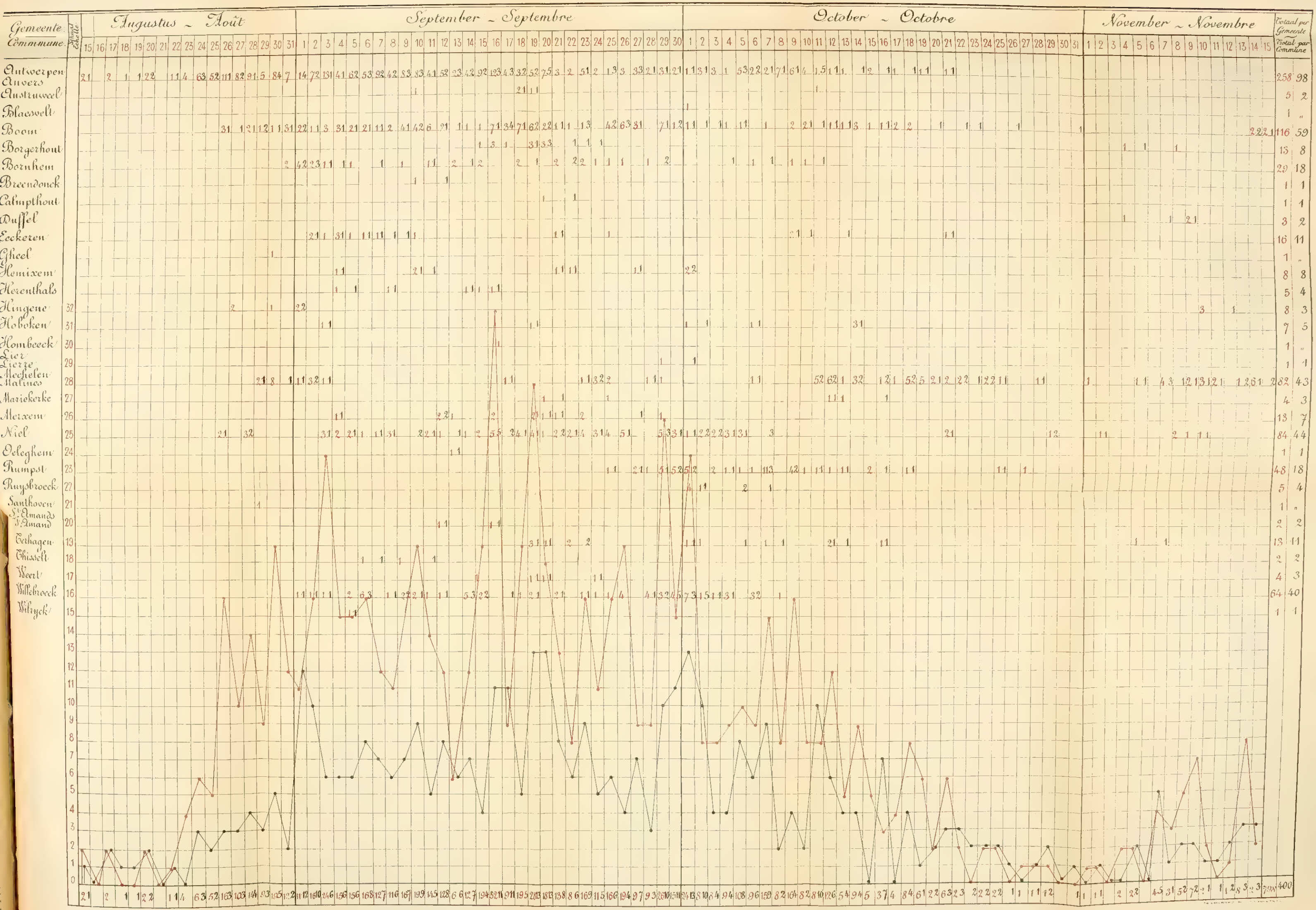
CHOLERA IN ANTWERP.

In response to inquiries Mr. Lincoln said that cholera was introduced into Antwerp by a ship which came from Havre; that most of the cases occurred among the people who lived near the canals and wharves where they were employed, and where the water becomes very stagnant owing to the conformation of the basins. The first case was reported on the 15th of August, 1892, and during the entire epidemic there were in the province of Antwerp 798 cases and 400 deaths up to the end of November, 1892; the highest number of cases in Antwerp occurring in one day was 12, the highest number of deaths in one day, 5. The accompanying diagram, prepared by the health officers of the province, shows the fluctuations of the epidemic of 1892. There is a general impression among the health authorities that there will be a recurrence of cholera during the coming summer, and the sanitary authorities are making what preparations they can to prevent it. Consul Lincoln made some suggestions, which had been proposed by other consuls we had visited, to the effect that consular officers should be permitted to cable direct to the Department the exact condition of the health of their respective districts as often as the conditions seemed to demand it, which they were not now authorized to do. He also called our attention to the form of a bill of health issued by the State Department, which the consuls found it almost impossible to prepare in accordance with Department regulations; he suggested that the consular officers be required to indorse upon the weekly bulletins issued under the seal of the governmental authorities of the several consular districts, upon forms which in this case are prepared by the Belgian health officers, the facts concerning the sanitary condition of the district, as certified to the consul, by the health authorities. The health board at this place consists of a chairman, who is a cabinet officer, and three other persons, one of whom must be an eminent physician, the others a burgomaster or prominent official or citizens. From time to time these officials issue a bulletin in form prescribed by law, in the body of which is written the number of cases of cholera or other infectious disease, and whether it is sporadic or epidemic in character. This document is signed by each one of the officials under his own seal and is the official document of that particular community. The facts contained therein are derived from the regularly constituted authorities in each province, and is in fact the only official information to be had on the subject.

If the consul were authorized to forward one of these forms, indorsed by him, certifying its authenticity, the Government would then have the precise information which the Government here possesses, and our consular officers would be relieved from making a separate statement, which must be sworn to by them as the truth, and for which they must rely upon statements made throught the ordinary channels.

Provinciaal bestuur van Antwerpen.
Gouvernement provincial d'Anvers.
Cabinet.

Provincie Antwerpen – Cholera 1892 – Province d'Anvers.



Gemeente / Commune	Totaal per Gemeente / Total par Commune	
Antwerpen / Anvers	258	98
Austruweel	5	2
Blaesvelt	1	„
Boom	116	59
Borgerhout	13	8
Bornhem	29	18
Breendonck	1	1
Calmpthout	1	1
Duffel	3	2
Eeckeren	16	11
Gheel	1	„
Hemixem	8	8
Herenthals	5	4
Hingene	8	3
Hoboken	7	5
Hombeeck	1	„
Lier / Lierre	1	1
Mechelen / Malines	82	43
Mariekerke	4	3
Merxem	13	7
Niel	84	44
Oeleghem	1	1
Rumpst	48	18
Ruysbroeck	5	4
Santhoven	1	„
St Amands / St Amand	2	2
Terhagen	13	11
Thisselt	2	2
Weert	4	3
Willebroeck	64	40
Wilryck	1	1
	798	400

Gevallen ―•― Cas
Overlijdens ―•― Décès

Consul Lincoln furnished us with the form issued by the Belgian Government, with his certificate attached, together with the bill of health used by him at this consulate, of which the following are copies:

No. ——.

Sanitary service of the ——.

[SEAL.]

BILL OF HEALTH.

The sanitary commission of the —— certifies that the steamship called ——, captain —— , gauging —— tons, under flag ——, leaves this port loaded with ——, having on board —— persons, comprising the captain and —— passengers, according to the register viséd at the bureau of the marine to go to ——.

It is further declared that at Antwerp or its environs there is no epidemic disease.

Given at Antwerp, ——, 189 .

—— ——,
Secretary.

—— ——,
The Governor of the Province, President.

Members of the medical commission of the province:

—— ——.
—— ——.

CONSULATE OF THE UNITED STATES OF AMERICA,
Antwerp, 189

I, —— ——, consul of the United States of America for Antwerp, do hereby certify that the signature of —— —— and the seal of —— —— to the instrument of writing hereto annexed are true and genuine, and as such entitled to full faith and credit.

Given under my hand and seal the day and year above written.

—— ——,
U. S. Consul.

CLEAN BILL OF HEALTH.

CONSULATE OF THE UNITED STATES OF AMERICA,
Antwerp.

I, —— ——, consul of the United States of America at Antwerp, do hereby certify that the —— called the —— of —— burden per register —— tons, commanded by ——, navigated by —— men, and having on board —— passengers, leaves this port of Antwerp in free pratique, bound for ——.

I certify that good health is enjoyed in this town and the adjacent country, without any suspicion of plague, cholera, or contagious distemper whatsoever.

In witness whereof we have hereunto set our hand and seal of office, at Antwerp, this —— day of ——.

—— ——,
U. S. Consul.

We were furnished with a statement made by a gentleman of distinction residing in Antwerp, whose name we were requested to withhold, with the following facts concerning former epidemics of cholera in Antwerp which had occurred during his official residence in this city and which he said were obtained from provincial records. The statement is as follows:

"In the year 1831 there were a few sporadic cases of cholera, followed by the severe epidemic of 1832. In 1848 there were but few cases in the city; these were followed by the severe epidemic of 1849. Again in 1853 there were but a small number of cases, followed by the epidemic of 1854. In 1858 only a few cases occurred, but in 1859 came the general epidemic. In 1865 there were a few cases in Antwerp, but the year 1866 brought the severe epidemic. Now," said he, "we have had the outbreak of 1892, and it remains to be seen what next year will bring forth. Judging from the records of former outbreaks in this city, we have some reason to expect the full epidemic in the summer of 1893."

January 14, by appointment, we had a lengthy interview with officials of the Red Star Steamship Company, Mr. Marsily and Mr. Strosser being present. The object of our visit was stated to them and they promptly offered us every facility to examine for ourselves into all details concerning the manner in which emigrants are cared for and the preparations which they are now making to carry out the requirements of the United States concerning disinfection of emigrants' baggage and measures for preventing the introduction of diseases into the United States. These gentlemen told us that they had now arranged matters so that every emigrant arriving in the city was taken at once to boarding houses, which are supervised and under the control of the steamship company. Any person who received boarders into his house, refusing to comply with the rules of the company, was stricken from their list and is not allowed to receive, board, or lodge any emigrants. At this time the rooms of the several lodging houses in the city are being measured by competent engineers to determine the cubic capacity of each with a view to limit the number of persons assigned to each room.

It is the company's purpose to place a placard in each room, printed in all the languages ordinarily used at this port, which will state, among other things, the number of persons who will be permitted to sleep in the room. They informed us that it is their purpose to fumigate all rooms at certain fixed intervals in any event, and as frequently as may be found necessary, in case of actual or supposed contagious diseases occurring at any time. The boarding houses visited were clean and well aired, the beds comfortable, the food plain, but abundant; the prices for board and lodging range from 30 to 75 cents a day, according to accommodations. Mr. Strosser stated that in his opinion the best way to prevent the spread of contagious diseases was to interdict the entrance of any person from an infected city into any other; that it would be the best policy for the American and all other governments to suspend emigration from any country in which contagious diseases were epidemic until the subsidence of the epidemic; that this would not be a hardship upon anyone and it would certainly restrict the spread of the disease.

Relative to the disinfection of emigrants' baggage, we had an extended conversation, and they related to us what they had hitherto done.

When cholera first appeared on the Continent the steamship company endeavored to formulate a plan as to what could be done. Before it was positively known that cholera existed, there had already been forwarded to them for shipment to New York a quantity of baggage. As they had no disinfecting chamber they put the baggage in the hold of the ship, ignited pots of sulphur, closed and caulked the hatchways and kept them closed for a period of six hours. This was done under the inspection of one of the surgeons employed by the steamship company and some one sent by the American consul to watch the operation. After one cargo was thus fumigated, they decided that this method affected only the exterior of the packages, and it would be necessary to adopt more decisive measures. Much of the baggage belonging to emigrants is forwarded by them from their homes to New York in bond, so that upon arrival in Antwerp the baggage remains in the custody of the customs officials until it is placed in the hold of the steamer, the customs authorities remaining on duty watching the bonded packages until the steamer leaves the wharf; hence it is impossible for them to open baggage coming in bond. They estimated that during the last season nearly 80 per cent of the baggage coming to Antwerp was forwarded in bond, this plan affording the immigrant immunity from the many customs examinations which necessarily occur in traveling across any considerable part of the Continent of Europe to Antwerp. As a good many emigrants have from two to six packing cases or boxes, the customs examination at each border is very troublesome to them, and they obviate the whole difficulty by having their baggage forwarded in bond.

The quantity of bonded baggage has increased to such an extent that the Red Star Company has been compelled to build a large room at their wharf into which this class of baggage goes for the convenience of the customs authorities, who have no room in which to put it, and unless there was some modification of the Belgian law relating to baggage in bond, which it was not to be expected would be made at their request, they did not see how it would be possible for them to disinfect this class of baggage on this side. During the conversation, Mr. Strosser said there are twenty-two ports along the Atlantic coast on this side of the ocean from which emigrants embark. To carry out the regulations required by the U. S. Government it would be necessary for each port to have a disinfecting apparatus if baggage is to be disinfected on this side. Said he, "It is my idea that all companies should unite and cause to be erected at three or more of the principal ports of entry in the United States apparatus adequate to do this work properly, the disinfecting rooms to be constructed according to plans prepared by sanitary authorities, and the disinfection carried out under the supervision of United States officials according to their own methods." Continuing, he said: "There are several advantages in this plan. The baggage is all together; the emigrant must remain at the port of entry until his baggage is disinfected. As it is now, even if the baggage does not come to us in bond, he arrives with his boxes in the morning, expecting to leave on the steamer which sails the same day, which, of course, would not give us sufficient time for the work to be properly done. If all the steamship companies were to unite in this plan it would be less expensive, it would occasion less inconvenience to the emigrant, and would be more effectively carried out at those places properly equipped than it is possible to do at the twenty smaller ones on this side of the Atlantic."

The officers of the Red Star Steamship Company informed us that they now endeavor to disinfect the baggage of emigrants by removing everything from the trunks and boxes that were not in bond. We visited the room where this work is now done. It is 70 feet long by 20 feet wide and about 14 feet high, lined with sheet iron and made as tight as practicable. In the room there are three tiers of racks, one along each side, and one extending through the middle, leaving two passageways from end to end of the building. On these racks we saw the baggage of 278 steerage passengers spread ready for disinfection by sulphur fumes. Mr. Strosser explained that the room was entirely inadequate to disinfect all the baggage which came to Antwerp, as some ships carry from 800 to 900 steerage passengers, and as a rule these people reach Antwerp a few hours before the boat sails. Said he, if the U. S. Government insists that disinfection shall be done on this side it will be necessary for us to compel the passengers to wait here a week, because it will be impossible to find room anywhere near the docks on which to erect a disinfecting plant of the size requisite to disinfect the baggage for such a number of people, and this does not provide for the disinfection of baggage in bond. Again, said he, it is the general opinion of the steamship companies that when cholera becomes epidemic emigration will be stopped by proclamation of the President; therefore it would be a useless expenditure of money to erect buildings large enough to disinfect all the baggage coming to ports of departure. In response to our inquiries, Mr. Strosser said he was quite clear upon the point that it would be better for all continental steamship companies to unite and build disinfecting plants at the principal ports in the United States, and that he believed such a method would be acceptable to all; that it was his purpose to submit the plan to the next general meeting of the steamship companies, soon to be held, for the purpose of eliciting opinions from the members of the association. Mr. Strosser extended a cordial invitation to us to be present at the next meeting of the association, promising to notify us by telegraph when the date should be fixed.

Since the date of our visit at Antwerp the Red Star Company, finding the disinfecting chamber entirely inadequate to do the work required, have commenced the constructing of a steam-disinfecting chamber for baggage, which they believe will meet all demands likely to be made upon them.

Speaking of the cholera epidemic just ended, Mr. Strosser stated that the municipal authorities of Antwerp took immediate possession of every house in which a case of cholera occurred and removed all the people from it, sending the sick to hospitals and the suspected to detention buildings. They then sent a portable engine, owned by the city, to the house, which was sealed as tightly as possible, and forced steam, impregnated with sulphurous acid gas, through the entire house, having no regard to anything but the proper disinfection of the building.

January 16 we visited the rag-exporting establishment of Mr. J. Hastiere. This is a large establishment, their usual shipments being 15 tons a day. The proprietor informed us that it was not so much at present, because business was depressed owing to the stoppage of shipments to the United States, but that they were still sending rags to England.

Mr. Hastiere said that he had made but one attempt at disinfection, which was four weeks ago. There is a fairly good room connected with the establishment which could be readily converted into a disinfecting chamber, and which he said he would arrange just as the United States officials wanted, because it would be to his business interests to do so. He explained that the only attempt he had made at disinfection was by putting the rags on the floor in piles, as he had no racks, and that he put in one large iron pot containing sulphur; this method was certified to as fulfilling the requirements of Department circular, and the rags were sent to the United States. They employ 80 sorters at this place, and had never known of a case of contagious disease among them. In response to our question, he said that all the rags came from Belgium; that he imported none from foreign countries.

We next visited the rag establishment of Mr. Van Riel, which is somewhat smaller than the last. The proprietor conducted us at once to what he called the disinfecting room. He had arranged a series of movable racks, which he put up on "horses" in his main building, a room nearly 200 feet long by 40 feet wide and 12 feet high. One side of the room was full of bins for the rags, the other part being used by the workmen for packing, etc. The racks, he explained, were put up crosswise of the building, the rags put on them, and the sulphur ignited. He could not tell how many rags were put on the rack at one time, but "they were piled as full as they could hold;" nor did he know how much sulphur he burned at any time. It was apparent that under no circumstances could disinfection be properly carried out in this room in its present condition, as there were large doors opening from this part of the establishment into others equally large, while the broken window panes and the jointed tile roof permitted the fumes to escape as rapidly as they rose. We pointed out these defects to him, but he said that he was "not willing to make any other arrangements, for disinfection in this room is good enough."

As at the other establishments, we saw the sorters picking out "new cuttings" from among the old, filthy rags.

At the Hastiere establishment there were about 2,000,000 kilograms of rags then on hand ready baled for shipment. They had not been disinfected, and were to be sent to England. The inspection of these houses concluded the work of this character to be done in Belgium. In no sense is the disinfection carried out as it should be; it is not in accordance with the regulations prescribed by the Treasury Department, and is unsatisfactory and useless at those places where it has been attempted. It is our conviction that the only way in which this work can be properly done would be under the supervision of inspectors appointed by the U. S. Government, who should devote their entire time to this work.

January 17 we left Antwerp for Rotterdam, arriving there at 6 p. m. On the morning of the 18th we visited the U. S. consul, Walter E. Gardner, and arranged for an interview with the Netherlands Steamship Company for the purpose of examining the boarding house which they have recently built for emigrants and the arrangements made by them for a disinfecting chamber in which to fumigate emigrants' baggage, etc. After perfecting these arrangements we made some inquiries of Mr. Gardner concerning the disinfection of rags shipped from his consular district. One point is of special interest.

While making our investigations in Ghent and the other places in Belgium we were told at each place visited that all the rags which they baled had been gathered in Belgium; at only one place was it admitted that rags came from a neighboring country ("a few small towns in the north of France"). The consul at Ghent had informed us, as already stated, that he required certificates of orgin, in which the exporters stated under oath where the rags were gathered, and that he believed their statements made to him were correct, and that the rags came only from Belgium. While conversing with Mr. Gardner upon this subject, and without any intimation from us that we had conversed with anyone concerning the origin of rags, he related to us the experiences he had with rag exporters, and among other things said that he had recently corresponded with the U. S. consul at Ghent concerning the large exportation of rags from Holland into Ghent, and at our request he showed us his letter book and file of letters. We saw several letters from Consul Osborn in Ghent to Consul Gardner, in which Mr. Osborn stated that the rags referred to in a letter from Mr. Gardner (the receipt of which Mr. Osborn duly acknowledged) had been received from Holland and had gone to the rag establishment of Mr. Alphonse Van der Haege; that they were in loose bales and would be sorted and disinfected by him for shipment. The letters covering these statements were dated, respectively, November 23, November 24, and December 1, 1892, all the letters having been written immediately preceding our visit to Ghent. It is thus conclusively shown that the importation of rags from Holland into Belgium was known both to the U. S. consul at the date of our visit to him and to Mr. Van der Haege, whom, it will be remembered, assured us that all the rags baled in his establishment came from Belgium. In the letter dated November 3, 1892, Mr. Gardner wrote to Mr. Osborn that rags had been shipped from Rotterdam to Ghent; that they had been sent forward to avoid the restrictions imposed by the Department circular No. 143, and requested Mr. Osborn to look out for them. To this letter Mr. Osborn replied, under date of November 24, 1892, saying that he knew of 22 tons of rags which had been received by Mr. Van der Haege; that they were in loose bales, but that Mr. Van der Haege would sort them and disinfect them, and that he, Osborn, would personally see to the inspection of them. On December 1, 1892, Mr. Osborn wrote to Mr. Gardner that he had personally inspected the rags sent to Mr. Alphonse Van der Haege from the Netherlands, and that they had been disinfected before going to the United States.

Our investigations at Ghent, just related, show the fraudulent means practiced by Mr. Van der Haege to evade all methods of disinfection. Concerning the methods employed by Mr. Gardner to insure a proper disinfection of rags in this consular district, he stated that he employs an inspector who remains in the disinfecting chamber to see that the rags are spread upon the racks, in accordance with the requirements of the Treasury circular; that the inspector weighs the sulphur necessary for fumigating each charge, the quantity being determined by the cubic capacity of the chamber; the inspector ignites the sulphur, closes and locks the door, and then places a seal given to him by the consul over the keyhole of the door leading into the disinfecting chamber, and which the inspector alone may break at the end of the six hours of disinfection. The rags are then taken out of the chamber in the presence of the inspector and put in an adjoining compartment, where they are packed in bales, the inspector being present during the entire process. After they are baled he fixes upon each bale a certificate signed by him that the bale has been properly disinfected under his immediate supervision according to the Department circular.

Under this plan it will be seen that from the time the rags are put into the disinfecting room until they are baled and the certificates attached they are constantly under the supervision of the inspector. As a guard upon the diligence of the inspector Mr. Gardner issues to him from time to time a certain number of seals which are to be placed over the keyhole leading into the disinfecting chamber; he also knows the maximum capacity of the chamber. The inspector is required to report at the consul's office from day to day, and he must at each visit bring all the unused seals in his possession; the seals which have been canceled indicate how many times the disinfecting chamber has been closed and, consequently, how many tons of rags have been disinfected. The shipping invoice is another check showing just how many bales have been shipped; the inspector's certificate, which in every instance is affixed to each bale, must tally with the number of bales mentioned in the invoice, so that each becomes a check upon the other; as an additional safeguard, the inspector is required to return to the consul all unused certificates of disinfection, which, when added to the number of certificates attached to the bales mentioned in the invoice, must tally with the original number of certificates issued by the consul; finally the inspector is required to make an affidavit as to the number of bales which have been disinfected and inspected, to which his certificates, bearing certain marks and numbers, had been affixed by him, which marks and numbers must be set forth in his affidavit. The shipper is also required to file independently his own affidavit, showing the number of bales shipped by him and which are named in the invoice, also setting forth that the rags have been disinfected, that they are in a wholesome condition, to whom they are shipped, and through whose hands they are forwarded. Thus the number of seals placed over the keyhole of the disinfecting room must tally with the number of inspector's certificates attached to the bales, the inspector's affidavit must tally with the shippers affidavit, and all must tally with the invoice. In order to complete the inspection Consul Gardner assured us that he makes frequent personal visits to the disinfecting establishment and keeps himself fully informed of all details.

The seal issued by the consul to be placed by the inspector over the keyhole of the door leading into the disinfecting chamber is the impression of the consular seal used in this consulate, and is affixed over the keyhole by mucilage. If the seal is broken by any person other than the regularly appointed inspector the room is opened by the inspector, new sulphur put into the iron pots, the room closed again for six hours, and a new seal put over the keyhole. The certificate attached to each bale is as follows:

CONSULATE OF THE UNITED STATES,
Rotterdam, Netherlands.

The —— contained in this package, marked or numbered ——, have been duly disinfected under my supervision in accordance with process No. 3.

—— ——,
Sanitary Inspector.

Label No. ——

CERTIFICATE OF INSPECTION AND DISINFECTION.

I, ———, United States sanitary inspector at Rotterdam, Netherlands, do hereby certify that the ——— mentioned in invoice No. ——, hereto annexed, to wit, ——— bales marked ——— ———, and bearing upon each bale inspector's certificate, have been disinfected by exposure, under my seal, to sulphurous acid gas for a period not less than six hours, in accordance with process No. 3, prescribed in circular No. 143 of the U. S. Treasury Department, dated August 19, 1892.

Attest:

——— ———,
Sanitary Inspector.

ROTTERDAM, NETHERLANDS, ———, 189 .

CONSULATE OF THE UNITED STATES OF AMERICA,
Rotterdam.

I, Walter E. Gardner, consul of the United States, do hereby certify that the above is the true and genuine signature of ——— ———, and that he was on the date of signing the foregoing certificate authorized to superintend the disinfection of ———, intended for shipment to the United States of America from the port of Rotterdam. Dated at Rotterdam, Netherlands, this ——— day of ———, 189 .

In testimony whereof I have hereunto set my hand and affixed the seal of the consulate at Rotterdam, this day and year next above written.

——— ———.
Consul of the United States.

We then visited the disinfecting establishment of S. E. Cohen, of Rotterdam, accompanied by Mr. Gardner, which is the only establishment of the kind here. It is a large place, and at the date of our visit was capable of disinfecting about 150 tons a week. It is a brick structure, practically air-tight, having no windows or openings except the door and a flue through which the fumes may escape when opened after the disinfection is completed. The iron doors in front are provided with broad flanges, so adjusted that when closed they prevent the escape of the fumes. The ceiling is constructed of iron beams, with brick arches turned between the girders. In the chamber there are a number of iron racks set upon wheels, so that they may be easily rolled about. Each of these movable racks is composed of four tiers, one above the other, and about 2 feet apart. The rags are scattered loosely over the racks, which are made of iron wire (about a 2-inch mesh), when they are rolled into position. At a suitable place near the door of the disinfecting chamber there is a depression for the sulphur pot, arranged so that the inspector may be sure that the sulphur is thoroughly ignited before closing and sealing the room. The doors are then closed, locked, and a seal placed over the keyhole by the inspector, and the rags left in the fumes for six hours. At the end of this time the inspector breaks the seal, unlocks the door, and the movable racks are pulled out, rolled into an adjoining room, where the disinfected rags are removed and the racks recharged and returned to the disinfecting chamber, where this process is repeated. The present chamber is of sufficient capacity to allow the disinfection of 150 tons per week in a proper manner. The room was not large enough, however, to enable Mr. Cohen to supply his orders, and he obtained the necessary municipal permit to enlarge the chamber. He had nearly completed the work when the order came prohibiting the importation into the United States of all rags, and the unusually cold weather of this winter stopped the work. At our request Mr. Cohen furnished us with a copy of the plan of the new disinfecting chamber, which is here appended. (See p. 432.) Mr. Gardner informed us that the proprietor, Mr. Cohen, had promptly complied with all the regulations which he had established to insure the proper performance of disinfection required by the Treasury Department.

The room was not in use on the day of our visit, owing to the late order of the Treasury Department forbidding the importation of rags into the United States.

With the completion of the new part the output of the establishment would be 400 tons per week, and this represents about the regular output from Rotterdam. At this date rags are not permitted to enter England direct from the Netherlands, but they are first shipped to Ghent, where it is alleged they are disinfected; then they are reshipped to England and from thence to the United States. In view of the fact that rags are so theroughly disinfected at this place, it seems to be an injustice to stop shipments from Rotterdam while they are permitted from ports where there is no pretense of disinfection. The underhand methods which are practiced by so many rag exporters, and which are generally known to all of them, but which are unnoticed by those officials having authority to check and punish the delinquents, operate as an inducement for all to violate United States regulations. In one sense it is putting a premium upon illegitimate methods; and the stoppage of shipments of rags from Rotterdam, notwithstanding the efficient methods of disinfection which had been devised by Consul Gardner, had this effect, as the following communications show:

"*To Drs. Kempster and Irwin, Medical Commissioners, U. S. Treasury Department, Berlin.*

"GENTLEMEN: I beg to communicate to you, for whatever use you may choose to make of it, information as follows: Since the date of your visit in this city, Netherlands rags have been regularly shipped to England, whence they have been and are being reshipped to the United States as English rags. Rag men at Ghent, according to admissions made by themselves to rag dealers in this city, are now shipping Ghent and other Belgium rags to Dieppe, from which port they are sent to the United States as Dieppe district rags. At this moment the principal rag exporter of Rotterdam is in Bremen for the purpose of perfecting arrangements whereby Netherlands rags may be shipped to the United States via Bremen as German rags.

"The facts thus cited speak for themselves.

"I may take the liberty in this informal note to remind you (and I speak out of very recent personal experience) that it is demoralizing to the business and destructive of the efficiency of this or any other consulate when shippers are able to boast, as are the shippers of this port at the present time, that they can flagrantly disregard the sanitary regulations of the United States authorities, and those authorities can't help themselves.

"I am, gentlemen, very truly, yours,

"WALTER E. GARDNER."

The second communication contained the following: "Some recent interesting developments concerning rags I now note for your information, as follows: On Tuesday last I learned that J. Hastiere, rag exporter of Antwerp, and Mr. Van der Haege, at Ghent, had received cable advice from New York that the prohibition of rags into the United States had been intermitted for the space of one month; that the exporters above named were buying extensively; that they had contracted space for considerable shipments per Puritan Line steamer (Thomas Runnalson & Co., agents) to sail from Antwerp for New York on February 15.

"Having circumstantial statements as above, I communicated with Mr. Lincoln, consul at Antwerp, who replied, 'My instructions unchanged; rag shipments still prohibited;' also with Consul-General King, Paris, who replied: 'All rags except new cuttings prohibited.' Then I asked Cohen & Co. of this city to telegraph J. B. Cummings & Co., the representatives in London of Train, Smith & Co., for whatever new information they might possess. Cumming & Co. have sent the remarkable reply that the order of prohibition has been rescinded but only to the extent of permitting the entry of rags from Belgium. I submit the matter to you as it has come to me with the following inclosure, and am

"Yours very truly,

"WALTER E. GARDNER,
"*Consul of the United States.*"

[Inclosure.]

"U. S. CONSULATE,
"*Antwerp, February 10, 1893.*

"Hon. WALTER E. GARDNER,
U. S. Consul, Rotterdam:

"DEAR SIR: I have this day received a letter from the U. S. consul at Ghent containing copy of telegram to the following effect: 'Washington, February 9, 1893. Treasury decided rags from Belgium admitted until March 23, 1893, must be accompanied by consular certificate of disinfection as described in Treasury circular 143, August 19, 1892, and also by affidavit of consignor authenticated by consul that rags do not come from place where cholera is prevalent. Inform other consuls in Belgium. (Signed) Wharton.'

"Very truly, yours, GEORGE F. LINCOLN,
"*U. S. Consul.*"

This dispatch, sent from Washington to the consul at Ghent, was dated more than six weeks after our cablegram, and written reports were sent from Ghent to the Surgeon-General of the Marine-Hospital Service (dated December 21, 1892) detailing the total and intentional disregard shown to the requirements of circular No. 143, Treasury Department, and notifying him that rags were being shipped in large quantities from cholera-infected countries, via Ghent, to the United States.

After completing the inspection of the Cohen disinfecting establishment we went to the office of the Netherlands American Steamship Company, Rotterdam, according to appointment, and there met Mr. Otto Reuchlin, Mr. J. V. Wierdsma, directors, and Mr. J. Wilmink, general passenger agent. We had a lengthy interview with these gentlemen concerning the disinfection of baggage, etc., and arranged to go with them early the next morning to inspect the several establishments which they have recently constructed.

January 20, in accordance with the previous programme, we went to the new "emigrants' hotel" built by this company and now nearly completed.

It is a substantial brick structure, provided with plain but modern appliances for lavatory and bathing purposes; it is lighted by electricity, warmed and thoroughly ventilated, and provided with fire escapes; it will accommodate, when finished, about 500, and its locality is such that the company can keep all the inmates isolated from the city. It is supplied with reading rooms, sitting rooms, café, and the usual conveniences of modern hotels. On arriving at this establishment each emigrant is furnished with a card, planned so that the day and hour of arrival may be punched out. The number of members of his family and the quarters assigned to them in the house are marked on the diagram. They are permitted to remain in the lodging house as long as it may be necessary for them to do so.

A short distance from this building there is a plain wooden structure designed for an independent bathroom, disinfecting chamber, and small hospital, into which people with contagious diseases may be immediately transferred until the form of disease is determined, and the necessary arrangements made to send them to the proper hospital. Emigrants arriving who are unusually dirty will be compelled to bathe first in the outside establishment before being assigned quarters in the hotel, which is supplied with the ordinary bath tubs.

The hotel, bath house, and hospital are so planned that they may be flushed out and the floors and walls washed with water thrown through hose. The building is under the immediate supervision of the steamship company, and will not be leased or rented. One of the company's officers will reside in the building as manager. It will be visited by a surgeon employed by the company at least every day and oftener if necessary. The general plan of the establishment is such that it is made to conform in some respects to the conditions of life on shipboard, to some extent accustoming the emigrant to the sea life which he is about to undertake.

From this place we went to the company's docks, where they have built a chamber for disinfecting baggage either by steam or sulphur. The officials informed us that it was their purpose to do everything that could possibly be done to prevent sickness on shipboard, because that was mere business precaution, if they had no higher motive in view.

After a full discussion of the subject, they said that if the other continental steamship lines agreed to do so, they would join in the proposed method to establish disinfecting plants in the United States, heretofore described. They said that they believed this plan would be most satisfactory and in their opinion would meet with the full support of all steamship lines.

In response to our question they said the laws of the Netherlands would permit baggage sent in bond for shipment to be opened for the purpose of disinfection, if this was done in the presence of the custom-house officials. They estimated at the present time that 40 per cent of the baggage which they handled came to them in bond.

They explained that the law of Holland permitting baggage to be opened was entirely different from the Belgian laws above mentioned. The officers of the Netherlands Company, as well as others to whom we have mentioned the subject, express themselves as much pleased with the prospect of the passage of a law by the United States establishing a national quarantine, for the reason that they would then know what the regulations were for the entire country.

It was their opinion that should cholera reappear this summer the movement of emigrants would be interdicted by continental governments until it ceased, but whether this was done or not it would be the policy of the Netherlands Company to comply promptly with all regulations made by the U. S. Government to prevent the introduction of contagious diseases.

This company has been disinfecting externally for some time the baggage of emigrants going to the United States. We stated to them that external disinfection alone would not be satisfactory to the United States authorities, and that it would be necessary to remove the contents of boxes, etc., to make the disinfection thorough; they replied that this would be done whenever the Government of the United States required it. Consul Gardner, who was present at the interview, stated that the companies had told him they would cause the disinfection of the contents of all trunks and boxes whenever he requested them to do so, and that they are prepared to do it at this time if necessary.

All vessels sailing from Rotterdam, before they leave port, are thoroughly disinfected or fumigated under the supervision of a practical chemist appointed by the U. S. consul and subject to his orders. He goes on board, and for the time being assumes charge of the vessel, and, with a crew of men, washes the sides and woodwork with solutions of creolin or corrosive sublimate, and then disinfects or fumigates the hold and all other closed places. This is done to every vessel, whether carrying passengers or not; even petroleum tank ships sailing from here to the

United States are thus cleansed and fumigated. After the disinfection the chemist makes an affidavit which, being first certified by the consul, accompanies the ship, and a duplicate is filed with the U. S. consul.

At the request of Consul Gardner, the Netherlands Steamship Company prepared a blank form which is to be filled out by every steerage passenger going to the United States, to be delivered to the commissioner of emigration at the port where they land. Mr. Gardner requires a full roster of all steerage passengers to be delivered to him before issuing a bill of health to the ship. He also requires that before going on shipboard every emigrant shall be examined by two physicians nominated by him; and that any person turned aside by the physicians for further examination can not go to the United States until a complete physical examination shows that the person so held is in good health. After the steerage passengers have been examined, the physicians sign the roster, and Consul Gardner appends his certificate as to the genuineness of the physicians' signatures. In addition to this examination the steamship company are required by Netherland laws to have all emigrants examined by competent physicians before they sail, and the ships are also inspected by Netherlands officials to see that everything thereon conforms with the law.

While engaged in inspecting the Netherlands Steamship Company docks we saw in one of the warehouses a large quantity of hides which had been sent from Russia, awaiting shipment to the United States.

We were told that they had been disinfected and certified to by some American consul in Russia, whose name could not be ascertained. They were packed, six hides in each parcel, and branded "Russia." There was no mark upon them to indicate that they had been disinfected. In this connection Mr. Gardner told us that a short time since a man came to his office and said that he had in midstream a cargo of wool which he had just brought from Russia and requested Consul Gardner to issue the necessary papers to admit the wool into the United States. This Mr. Gardner declined to do. The man said that the wool had been disinfected in Russia, but that he had touched at various places for supplies, and insisted that Mr. Gardner should give him a new certificate. Mr. Gardner told him that all he could do would be to certify as to what he, the shipper, had told him, and nothing further. He also informed this man that he did not think the wool would be admitted into the United States under any circumstances. The man then went away and nothing further has been heard of him.

The following are the blanks issued by the Netherlands Steamship Company, at the suggestion of U. S. Consul Gardner, relative to emigrants sailing from the port of Rotterdam to the United States, together with a card supplied by the company to each person who occupies a bed in their hotel:

CERTIFICATE OF DISINFECTION OF STEAMER.

I, Dr. ——— ———, a duly licensed chemist of the city of Rotterdam, do hereby certify that I have this day personally supervised the disinfection of the steamship ———, of ———, about to clear from Rotterdam for the port of ———, in the United States; that all water-closets and open spaces of said steamship have been fumigated with chloride of lime and carbolic acid; that all walls and exposed surfaces have been washed with a 3 per cent creolin solution; that there has been throughout a thorough cleansing and flushing with water: and that the said steamship is, on this date, free from suspicion of infection, and is, in all respects, in good sanitary condition.

Dated at Rotterdam, this ——— day of ———, 189 .

——— ———,
Licensed Chemist.

CONSULATE OF THE UNITED STATES OF AMERICA,
Rotterdam.

I, Walter E. Gardner, consul of the United States, do hereby certify that the above is the true and genuine signature of ——— ———, and that he was, on the date of signing the foregoing certificate, authorized to superintend the disinfection of steamers clearing for ports of the United States of America from the port of Rotterdam.

Dated at Rotterdam, Netherlands, this —— day of ——— 189 .

In testimony whereof I have hereunto set my hand and affixed the seal of the consulate, at Rotterdam, this day and year next above written.

——— ———,
Consul of the United States.

Steamship ———. Contract No. ——. List No. ——. Name in full, ——— ———. Age, ——. Sex, ——. Calling or occupation, ———. Read and write, ——. Native country, ———. Last residence, ———. Intended destination, State or Territory, ———. Transient, in transit or intending protracted sojourn, ———.

Names in full.	Age.	Sex.

I, ——— ———, hereby certify to the Netherlands American Steam Navigation Company, at Rotterdam, that I desire to go to the United States of America, and further declare that I am ——— ———, a citizen of the United States, resident at ———, a resident at ———, in the State of ———, United States, a tourist going to ——— in the State of ———, United States, in order to visit ——— ———, who resides in the city of ———, in the State of ———, United States, and that it is not my intention to remain in the United States, but that I desire to return to my native country, ———, within a reasonable time.

The ——— of a ——— at ———, in the State of ———, United States, and am accompanied by my ——— ——— children.

And I do solemnly declare that the above statement is true and correct.

Dated at Rotterdam, this —— day of ———, 189 .

(Signature) ——— ———.

The following is the hotel card used:

[Front of card.]

Saloon No. ——.

BED NUMBERS.

....
....
....
....
....
....

	M.	T.	W.	Th.	F.	S.	S.	M.	T.	W.
B..										
D..										
S..										
L..										

[Back of card.]

HOTELKAART.

Deze kaart te bewaren en op aanvraag te vertoonen.
Diese Karte ist aufzubewahren und auf Verlangen vorzuzeigen.
This card must be kept and shown if required.
Cette carte doit être gardée et présentée sur demande.
Tę kartę niechaj każdy przy sobie zachowa by ja na żądanie mógł okazać.
Ten listek se usková á na požadaní se ůkáže.
Ez a kártyát kel megtartazni és a tudakazódásrá elémutatni.
Detta kort är till uppbewaring för att framvisas när det begäres.
Dette kort maa forvares og fremvises naar det forlanges.
Dette Kort maa opbevares for at fremvises naar det forlanges.
Este billete se debe guardar y mostrar cada vez cuando esta pedido.
Questo biglietto deve essere conservato e mostrato al demando.

CHOLERA IN ROTTERDAM.

At the date of our visit we found the city very dirty. The numerous canals then frozen over showed the unsanitary condition of the place. All along the canals, lying upon the ice, where they had been thrown or swept, were piles of refuse material, decaying fruit, and vegetables, decomposing meat or fish, and the snow, mud, and filth which were swept from the streets. When the ice melts this refuse falls to the bottom, preparing soil for the nourishment of disease germs; the branch canals are beyond the influence of the swift running Maas and this material can not be swept out by the stream. Lying in the canals are hundreds of boats, each one the home of a number of people who live in them during the winter months, ice-bound.

The sewage and general refuse from them are also thrown into the canals. In general the canals are at the backs of the houses and shops and are made the receptacle for the sweepings and general dirt which accumulate in them; under these circumstances the conditions must invite disease. The sanitary authorities do not prevent these unwholesome proceedings, which seems all the more remarkable as there are at this time cases of cholera in the Netherlands not far from this city.

The first case of cholera was officially reported to Consul Gardner by the burgomaster September 7, 1892; the official report gave the street and number of the house where the case occurred; the last case was reported November 19, 1892; total number of cases, 34; total number of deaths, 23; highest number of cases reported in one day 9, and on the same day occurred the greatest number of deaths, 8. The mortality was very high; all the cases occurred among laboring men or boatmen employed on the canals.

We were informed that the Netherlands law provides that when a case of cholera is known to exist, the person attacked must be taken immediately to the cholera barracks, erected outside of the city; every article of furniture, bedding, or clothing must be burned, and the house thoroughly disinfected and fumigated; the walls and woodwork must be washed with a solution of corrosive sublimate. While the law provides for burning the movable articles in the house, it is rarely done.

It is the opinion of the health officers and others with whom we conversed that there will be a renewal of the disease with the coming summer.

When the cholera made its appearance on the Continent last year the Netherlands Steamship Company placed large placards about their docks and yards notifying their workmen that any employé drinking the river water would be instantly dismissed; and under no circumstances would be employed again. From that time until the present they have furnished their employés with tea or beer, and they have provided large Pasteur filters on the grounds and steamers for the use of all employés.

Sunday, January 22, we left Rotterdam for The Hague, and the next morning called upon U.S. Minister Thayer and requested him to procure for us all official documents which had been issued by the Netherlands Government concerning the importation of rags; also, any documents relating to cholera and its prevention. During the past season there were but very few cases of cholera at The Hague, and it did not appear to attract much attention. A recent royal order relating to rags is as follows:

[From the royal order of July 13, 1892.]

ARTICLE 1. The importation, transit, and removal of rags, old clothes, and unwashed underclothes and bedding is prohibited from such countries and places as the ministers of the interior and finance shall indicate.

The indication of such places shall appear in the Staats-Blad at least three days before the prohibition takes effect.

The aforementioned ministers are authorized to amend their notices in this regard as often as circumstances demand; also, to make all arrangements affecting passengers' baggage, giving notice thereof in the Staats Courant.

ART. 2. This order shall go into force fifteen days after the date of printing in the official organ in which it appears, and shall continue in force for the period of one year.

(Signed) EMMA.

January 24 we left for Amsterdam, and on the morning of the 25th visited U. S. Consul Schlier, who said that there had been but two shipments of rags direct to the United States since Department circular 143 went into effect, but that quite a large quantity of "old bagging," "cotton waste," "new cuttings," and "old paper" had been sent, as the Treasury Department did not demand that they should be disinfected. There are two rag-exporting houses here, Vreeman & Co. and Gomperts Bros. There are a number of small dealers, but their stock generally goes through the hands of the firms above mentioned.

Vreeman & Co. have a small disinfecting room which was recently built and has been used but once. In company with Consul Schlier we visited it; the disinfecting chamber is a rudely constructed affair, built of rough boards, and by no means tight; it is about 20 feet long, 10 feet wide, and 12 feet high; inside there are four tiers of racks placed about 2 feet above each other; at the time of our visit the room was crammed full of filthy rags, emitting a horrible odor. The proprietors say that they ship about 3,600 tons a year; that they now have on hand 3,000 tons accumulated during the winter, which would now be forwarded to England, as the restrictions had been this day removed. We were told that all these rags came from the Netherlands. They do not sort rags as thoroughly as some other exporters, preferring to sell them in bulk; "new cuttings," "flax waste," "cotton waste," "bagging," and the technical "rag" all mixed together and forwarded to "Ghent, Hull, London, and the United States." There are at this place three warehouses four and five stories high, filled with rags, and the proprietor told us that he had recently rented others in the vicinity which were also full; the whole establishment was extremely filthy and the foul odors proceeding from it could easily be detected more than a block away. We next visited the establishment of Gomperts Bros., and, if it is possible, this place was filthier than the last; here we found immense piles of rags exposed to the rain, wet, and giving off a dank, offensive smell.

They have what they chose to call a disinfecting chamber, an old, tumbled-down rookery behind the warehouse, with hardly a whole pane of glass in any of the windows; cracks an inch or more wide between the boards, a large hole in the roof, and, of course, utterly useless for the purpose of disinfection.

Consul Schlier said that he had refused to give Gomperts Bros. certificates of disinfection because they had failed to comply with the Department regulations, but that the rags were sent somewhere without certificates. In response to our inquiries, Mr. Gomperts said, that they could disinfect about 200 tons per month; that they would prefer to send them direct to the United States rather than to London, because at the latter place they could sell only small invoices, but they could send a cargo at one time to America. He said that at present they could not send rags direct to the United States on account of the restrictions; but, he stated very frankly, that his rags were sold to dealers in Ghent or London and that they were shipped to the United States, as Belgian or English rags; he also said that they were receiving rags from Germany. The only restrictions upon rags from Germany at present were that they should not come by way of Hamburg, so they are shipped around that city and brought here, and from here reshipped to Ghent or London; he said that he sent some rags to Bremen, because there were no restrictions upon the shipment of rags from that port at this time.

Mr. Gomperts informed us that the restrictions which had hitherto prevented him from sending rags to England had been this day rescinded. Upon again questioning him as to where his rags came from, he replied, only from the Netherlands, apparently forgetting that he had previously informed us that he was receiving shipments from Germany. Later, Consul Schlier said that he had been informed, by a person whom he considered entirely trustworthy, that Mr. Gomperts had recently perfected arrangements to send rags to the United States via Trieste, but that as rags were now being shipped from Bremen, which port with Trieste had been left open for the shipment of rags to the United States according to instructions received from the U. S. Treasury Department, he supposed they would go via Bremen. Mr. Schlier said that Gomperts Bros. had once asked him for a certificate of disinfection for an invoice of rags which had not been disinfected, and which the consul declined to give. Mr. Gomperts told him that his refusal would make no difference, because the rags would be shipped anyway, and, said Mr. Schlier, I know that they went, but I do not know how. He said further that the whole business was conducted in a tricky manner, and in his opinion the only way for the United States to protect itself from the importation of undisinfected rags would be to adopt some method which could be supervised by an official who was directly responsible to and under the control of the consul.

The last shipment of rags from Amsterdam was made December 27, 1892, and went to Boston, via Hull, on the steamer *Europea.* There were 451 bales in the invoice.

Mr. Schlier's books show that on November 15, 1892, Gomperts Bros. sent to A. Cohen, London, en route to New York, 104 bales of rags which had not been disinfected.

The Mr. Cohen spoken of is the man who told us when we visited his place in London that he received no foreign rags, and that all the rags he sent to the United States were gathered in England. We saw the invoice covering this shipment to Cohen. These rags had undoubtedly been gathered in the Netherlands, or in Germany, during the summer or autumn months, and at a time when cholera was prevalent in those countries. They were not disinfected, but were sent forward accompanied by a certificate, verified before the consul-general of London, that they were English rags, and that there was no cholera or other infectious disease prevalent at the place where they came from.

The consul's books also show that Gomperts Bros. shipped to Atterbury Bros., of New York, on the 20th of December, 1892, 28 bales of old paper said to have been taken from the municipal building in Amsterdam and which was bought as old paper. The material was taken to this filthy establishment, where it was packed for shipment to New York.

At Oldenzaal, a town within this consular district, there is another exporter of rags, H. M. Cohen, who had recently shipped to San Francisco, on the sailing vessel *Maraval*, 320 bales of what is technically known to the trade as "cotton waste." This cargo was shipped via Antwerp. Zutphen, also within this consular district, ships large quantities of "old bagging" to the United States. Neither this nor the cotton waste is disinfected, because the trade nomenclature does not class either of these commodities as "rags." The "old bagging" is generally the receptacle used by the small dealers in which to pack and send to the exporters the rags which are gathered from the small places.

At Almalo there are some dealers who export rags to the United States, but their invoices are not authenticated at this consulate, and Mr. Schlier does not know the means used to get them out of the district.

On the 19th of September last, an invoice of 106 cases of rabbit skins came from Paris to Amsterdam consigned to E. Moussel, New York. There was no certificate of disinfection with them, and the consul decided that they must be disinfected here before he would send them forward. This was done. A few days after they had gone a certificate came to Amsterdam from Paris signed by one "Bouyer" purporting to have been legalized before Robert M. Hooper, vice-consul-general at Paris, dated September 15, in which it was stated that the goods had been disinfected in Paris. If it is true that the goods had been disinfected as alleged, it would seem that there had been great carelessness somewhere in neglecting to send the certificate of disinfection with the goods at a time when cholera was prevalent in France as well as in the Netherlands; and it seems a suspicious circumstance that goods should be sent from Paris to Amsterdam for shipment to the United States when there are several ocean ports so much nearer to Paris.

Hides are disinfected here in bulk, the original packages not being opened. They are put into the hold of the boat, the hatches covered by tarred cloth, while they are fumigated by sulphurous acid gas. During the prevalence of the epidemic of cholera there were municipal regulations prohibiting the importation of rags into Amsterdam from adjoining countries, but they are now suspended and rags are coming in again from all quarters.

CHOLERA IN AMSTERDAM.

The first death from cholera was officially reported to the consul on September 3, 1892, on which day two people died of this disease. The last death reported was on November 26. The total number of deaths was 18. The disease was confined almost exclusively to the canal boatmen or to the workers on the wharves. The canals are made the receptacles of all the filth of the city. Street sweepings, garbage, and even the sewers empty directly into them. The water in the canals is sluggish; in but few is there a perceptible current. It would seem that every effort had been made to invite disease because of the unsanitary conditions, but it is said that the death rate of Amsterdam is small. January 24, we prepared an abstract from our notes and sent it, with a cablegram, to the Surgeon-General of the Marine-Hospital Service, concisely setting forth the conditions found since our last report, of January 8, 1893.

While in Amsterdam we obtained the text of the certificate which must be sworn to before a British consul before rags can be shipped into England. The following is the form:

I, ——— ———, hereby make oath that the bales of rags marked ——— are of Amsterdam origin and that no part thereof has been brought from any other district.

(Sworn to before the British consul.)

In spite of the certificates required by both the British and American Governments, showing the origin of the rags, our investigations show that rags which have been gathered in all countries of Europe are sent as having originated in the place where the certificate is drawn.

January 26 we visited the offices and docks of the Netherlands Steamship Company, accompanied by Mr. J. Roussing, the agent here.

At the present time the company has no disinfecting room for baggage, but has fitted up a cabin upon one of the lighters, so arranged as to admit steam from the boiler of a tug or other steam vessel. Mr. Roussing said that it answered quite well for a temporary arrangement, and as most of the immigrants would hereafter sail from Rotterdam they had decided not to build a disinfecting room at this place. The present arrangement answer temporarily, but should there be any considerable shipment of emigrants' baggage from here, it would be inadequate. He said that they had disinfected bedding, etc., by opening the packages, but the boxes and trunks had been put into the disinfecting chamber unopened, which they had hitherto thought sufficient. The leather goods, and such material as steam would spoil, they put into freight cars standing on the side tracks, and disinfected them with sulphur; in the same manner they disinfect hides coming to them from Germany, but without opening the package. At the present time there are three steamships a week coming to Amsterdam from Hamburg, and one from Bremen. He also stated that many rags came from Hamburg but he was not sure that they were coming at this time; it was a matter of common remark among rag exporters that rags shipped to Ghent could be forwarded either to England or the United States without difficulty.

The boarding houses in which the emigrants remain prior to sailing are under the immediate control of the steamship company and are frequently inspected by their officers. Those which we saw were clean and comfortable. The charge to emigrants is 1 gulden (40 cents) per day, which includes room, food, and bath. Unmarried women going to the United States are not allowed to sit at the common table, but have meals served in their own rooms. Before the emigrants are permitted to go on shipboard they are inspected by officials of the Netherlands Government. The examiners include two physicians who are employed by the Government, and there is also present one of the company's surgeons. All persons found ill, or too feeble to make the voyage in safety, are returned to their homes or retained in the company's lodging houses until strong enough to make the journey.

January 27 we left Amsterdam for Bremen, reaching the latter place at 8 p. m., and the next morning we called at the office of U. S. Consul Hugo Starkloff, who explained to us the effort which had been made at this place to prevent persons who were inflicted with contagious or infectious diseases from going to the United States.

In April, 1892, Consul Starkloff, who is a physician, requested the North German Lloyd Steamship Company, whose vessels sail from this place, to cause a more thorough examination of intending emigrants than had hitherto been made. His reason for this request was, he said, that he believed that he had seen some cases of leprosy, lupus, and other contagious diseases go on board the vessels bound for the United States, and that a superficial examination would not reveal the true character of the disease. The directors of the company at once requested Consul Starkloff to engage the services of two eminent physicians who would assist in carrying out this work, which he did at once; thereafter, whenever emigrants arrived they were taken into rooms especially fitted up for the purpose by the company and thoroughly examined, generally in Consul Starkloff's presence. This had been going on for some time, when the rapid spread of cholera became alarming, and Consul Starkloff requested the directors of the company to issue further regulations, which they promptly did. In brief, these are as follows:

The company furnished Consul Starkloff with a list containing the names of all persons at whose houses the emigrants remained prior to sailing; the regulations required that immediately upon the arrival of an emigrant at any house the fact was to be reported by the proprietor to the consul's office. At noon every day one of the physicians employed comes to the consul's office and receives a list of the boarding houses in which the new emigrants are to be found, and the physician proceeds immediately to the several houses to inspect their sanitary condition, this being independent of the physical examination above mentioned. It soon became necessary to employ a third physician in order that this work might be thoroughly carried out. At the request of Consul Starkloff the boarding houses were required to put in bathrooms and modern water-closets. Those who failed to comply with this request, were stricken from the list and not permitted to receive emigrants. All emigrants coming from countries where cholera is known to exist are kept at the boarding houses at least one week before they are permitted to sail; meantime the physical examination is made and the clothing disinfected. At the physical examination each person is given a ticket which states the physical condition of the emigrant. If rejected by the physician the reason of rejection is written upon the ticket; also whether the rejection is temporary or permanent. These examinations were commenced in April and the disinfection of clothing in June, 1892.

As a result of this method the following statistics furnished by Dr. Starkloff are interesting, showing the care which must have been taken in making the examinations. The statistics embrace the period from April 8 to December 31, 1892:

Total number examined	82,351
Total number rejected	1,352
Number rejected for acute affections	204
Number rejected for contagious affections	276
Number rejected for heart disease	2
Number rejected for consumption	7
Number of cripples rejected	227
Number of idiots rejected	3
Rejected by reason of old age	469
Number of cases of lupus rejected	22
For illegal pregnancy	67
Unmarried women with children rejected	46
For marasmus	4
For tuberculosis other than consumption	8
For blindness	5
Deaf and dumb	5
Corneal ulcers	2
Epilepsy	1
Tumor of the neck	2
Sclerosis	1
Glaucoma	1

Of the whole number rejected 880 were returned to their homes; the others were sent to appropriate hospitals in the city, and upon complete recovery they were permitted to resume their journey to the United States. It appears that this method of examination is as nearly perfect as could be expected and demonstrates the value of having a competent medical officer responsible to the U. S. consul at every large port of embarkation. To properly carry out this system of examination a series of blanks has been arranged.

The following poster is conspicuously placed in each hotel to which the incoming emigrants are sent and is printed in seven languages:

A law of the United States of America prohibits emigration of the following persons:

1. Without any means whatever.
2. Incurables.
3. Cripples.
4. Weak from old age.
5. Prostitutes.
6. Criminals.

All emigrants upon landing in America are carefully examined. All those found disqualified are returned by the next steamer; even those found to be disqualified within two years from date of landing may be returned. It is therefore in the interest of the emigrant to pass a medical examination before departure.

This medical examination takes place every evening, except Sunday, at the depot of the North German Lloyd, the women, girls, and children at 6:30 p. m. and the men at 7:30 p. m. on the night of their arrival in Bremen.

When examined each emigrant receives a certificate, without which nobody will be allowed to step on board. The emigrants arriving only on the eve of embarkment must report the next morning one and one-half hours before the time of the express train at said depot to receive their certificates. Emigrants taken sick on the way to Bremen or during their stay there must await recovery before they will be allowed to embark.

Dr. VON STARKLOFF,
U. S. Consul.

NORTH GERMAN LLOYD,
Bremen, April 11, 1892.

After the examination, all those found free from disease are given a certificate, as follows:

Examined and found healthy.

Dr. Med. HAHN.

If for any reason the emigrant is temporarily rejected the person is furnished with a yellow certificate, as follows:

BREMEN, ———, 189 .

Name of person rejected ——— ———.
Place where from ———.
Hotel in Bremen ———.
Temporarily rejected on account of ———.
Number of passenger ticket ———.

——— ———,
Medical Inspector.

If permanently rejected they are given a red certificate and then returned to their homes. The yellow certificate is given for acute diseases; the red for chronic diseases and all the disqualifying causes named in the law governing immigration into the United States.

BREMEN, ———, 189 .

Name of person rejected ——— ———.
Place where from ———.
Hotel in Bremen ———.
Totally rejected ——— on account of ———.
Number of passenger ticket ———.

——— ———,
Medical Inspector.

All emigrants found to be suffering from a form of disease requiring immediate treatment are sent to the health office of the city with the following form, filled up and signed by the examining physician:

Medical examination, as required by the consul, of emigrants at the depot of the Lloyd Company.

To the Board of Health, City:

The following case of sickness, required to be reported, has been found by the medical examination:

Given and surname ——— ———.
Age ———.
Residence and country ———.
Hotel in Bremen ———.
Kind of sickness ———.

BREMEN ———, 189 .

The following regulations have been issued by the board of health of the city of Bremen, concerning Russian emigrants, and they are rigidly enforced:

RULES FOR THE MEDICAL EXAMINATION OF RUSSIAN EMIGRANTS.

A. At the depot.

1. Russian emigrants arriving in large bodies at the depot are placed under medical supervision until further orders.

2. All Russian emigrants arriving in large bodies must undergo a medical examination before leaving the depot.

3. Dr. Emil Janson, Faulenstrasse, No. 28, and Dr. Bockhorn, Sögestrasse, No. 23, are charged with this medical examination.

4. One of these physicians (depot physicians) must be at the depot for the 8:45 a. m. and 10:45 p. m. trains, and conduct the examinations.

5. In case a body of Russian emigrants arrives on any other train, the depot police must immediately send for one of the physicians. If none of them can be found, some other physician living near is called to conduct the examination of the emigrants.

6. The Russian emigrants, after leaving the train, must be held together on the platform by the police and the officers of the bureau of information until the other traveling public have left the depot.

7. An interpreter must inquire whether anyone has suffered on the road with vomiting or dysentery. The reply must be communicated to the depot physician.

8. All Russian emigrants must pass singly between the depot physician and the guard for medical examination, after which they again assemble in a body.

9. If a cholera suspect is found by the physician, who has to be sent to a hospital, he must be kept isolated at the bureau of information under instructions from the officer. The police department at the depot must then immediately telephone (*a*) to the police station (VII) Westerstrasse for the cholera ambulance; (*b*) to the police station (V) Schützenwallstrasse for the sanitary assistant (hospital steward?).

10. If the police bureau at the depot is notified by the station master that a cholera suspect is on an incoming train, or on one just arrived, the medical examiner must at once be called, if he is not already present. The emigrants are not permitted to leave the cars until examined by the physician. The cholera suspects remain in the cars until they can be transported to the hospital.

11. All members of the family of a suspect, and all who have been in the same car with him, must be kept isolated at a hotel under the instructions of the officer of the bureau of information.

If in the opinion of the medical examiner more or all passengers should be isolated, it will also be done under the instruction of the officer of the bureau of information.

12. When a cholera ambulance is called for the police officer at the station Westerstrasse will at once send an officer to the fire department station Westerstrasse for a horse and driver.

The ambulance is kept in the stable of Mr. Holste, carpenter, Neustadtswall, No. 37*a*. The key to the stable is kept at the police station, Westerstrasse. A police officer must accompany the ambulance to the depot.

13. The transport of the cholera suspect from the depot to the hospital in the ambulance is in charge of the sanitary assistant. The police officer must keep as far as possible from the suspects, and will render assistance only in the absence of the sanitary assistant. Hacks must not be used in the transport of cholera suspects. Dead bodies will only be transported in the hearse belonging to the board of health.

14. The sanitary assistant is instructed to send as soon as possible to the place of disinfection all the clothes, washing, and bedding of cholera suspects, and all such parties who have come into contact with them, also such articles known or supposed to be soiled with cholera dejections. He will also see that the isolation room, the cholera ambulance, as well as his own person, is thoroughly cleaned and disinfected.

B. *At the inn.*

15. Russian emigrants arriving in Bremen will be quartered at inns, designated by the officer of the bureau of information.

16. The innkeeper is not allowed, under a fine of 100 marks, to take in any but the Russian emigrants sent to him.

17. Under a penalty of a like amount the innkeeper must see that the emigrants undergo daily a thorough ablution, and that the rooms are kept clean. He must obey all instructions of the police surgeon and the sanitary assistant. He must also at once inform the supervising physician of any cases of indigestion, especially vomiting and dysentery (for those directly booked from home to place of landing, Drs. Hahn and Sonnenburg, and for the others, Drs. Dreier and Thorspecken).

18. The physician charged with the supervision of Russian emigrants must immediately report each suspicious case of sickness to the board of health.

19. When a case of sickness occurs in an inn, under symptoms which in the opinion of the physician requires transmission to a hospital, the innkeeper must see to the thorough isolation of the patient, and call on the police department for the ambulance and the sanitary assistant.

20. The police department must at once send for the sanitary assistant and telephone to station Westerstrasse for the cholera ambulance.

21. Upon arrival of the cholera ambulance, the transport of the patient, the disinfection of the clothes, bedding, etc., also the disinfection of the rooms, as prescribed in 13 and 14, must be attended to by the sanitary assistant.

22. The physician will decide which of the parties at the inn shall be isolated from the others.

The innkeeper must see that these instructions are strictly carried out, under penalty of a fine of 100 marks.

THE BOARD OF HEALTH.

BREMEN, *July 27, 1892.*

The North German Lloyd Steamship Company sent the following printed circular to every innkeeper in Bremen, by whom it must be conspicuously posted:

Passengers will be sent to such innkeepers who strictly carry out the following rules:

1. The following two solutions for disinfection must be kept on hand at each inn:

(*a*) Lime-milk: Two liters of broken, pure quick-lime (so-called fat-lime) is placed in 1½ liters of water; when the water has been absorbed and the lime is pulverized by that action, it is put in 8 liters of water and stirred to milk. This must be kept in a well-closed vessel and shaken before using.

(*b*) Carbolic acid soap-solution: 1 pound of brown soap is dissolved in 17 liters of hot water; then is added a wine bottle full of so-called carbolic acid of 100 per cent.

2. Carpets must be removed from all rooms occupied by steerage passengers.

3. Before using the rooms the floors must be thoroughly scrubbed with the carbolic acid-soap solution; tables, bedsteads, and chairs must be cleaned with soap; the bedding must be thoroughly aired and covered with clean linen; the rooms must be thoroughly aired; dark rooms must not be used.

4. One liter of lime-milk twice daily must be thrown into the closets, urinals, and drains. The seats of closets must be cleaned with carbolic acid-soap solution twice daily.

5. The rooms occupied must twice daily, in the forenoon and afternoon, be aired for some time, and the greatest cleanliness in the rooms must be observed.

6. Only boiled water must be furnished for drinking. Salads, fresh milk, fresh fruit, are strictly forbidden.

7. Special care must be taken that the emigrants clean themselves and their children with soap thoroughly. On the morning of the departure all have to undergo a thorough cleansing, and must put on clean linen.

8. A physician must at once be called in any case of indigestion (vomiting, diarrhea) and the North German Lloyd Company be informed.

9. The baggage of the passengers must have been disinfected the day previous, in accordance with existing instructions.

North German Lloyd, Passenger Division.

To Innkeepers.

The following poster is put up at all hotels and other places where emigrants assemble:

By request of the American consul, the passengers must send all their baggage for disinfection to the freight depot of the North German Lloyd at the railroad station.

North German Lloyd, Passenger Division.

CERTIFICATE OF DISINFECTION OF BAGGAGE.

Names of passengers of steamship ———, sailing on the ——— day of ———, 189 , from Bremen to ———, in the United States:

Name.	Where from.

U. S. Consulate, *Bremen*, ——— *189* .

I, ——— ———, do solemnly declare under oath that the baggage of the above-named passengers has been properly disinfected in accordance with rules prescribed by the U. S. Treasury Department.

Sworn to before me and subscribed in my presence this —— day of ———.

——— ———,

Consul.

U. S. Consulate, *Bremen*, ——— *189* .

Sir: Inclosed you will please find reports upon the examination and sanitary condition of steerage passengers of the steamship ——— sailing on the —— day of 189 , from this port to New York.

I am, sir, very respectfully, yours,

——— ———,

Consul.

To the Hon. Commissioner of Immigration,
New York.

BREMEN, ———, 189 .

Report upon the sanitary condition of the cabin and steerage passengers of the North German Lloyd steamship ———, whereof ——— ——— is master, sailing on the —— day of ———, 189 , from the port of Bremen for the port of New York, in the United States:

I, Dr. ——— ———, medical inspector, appointed by the U. S. consul at Bremen and by the North German Lloyd Steamship Company, do hereby certify and declare under oath that on the —— day of ———, 189 , I have personally and carefully examined the steerage passengers intending to sail with the above-named vessel, and find their sanitary condition and qualification for emigration to the United States as follows:

Number of persons examined, ——.

Number of persons accepted, ——.

Number of persons totally rejected, ——.

Number of persons temporarily rejected, ——.

Causes of Rejection.—Acute affections, contagious diseases, heart affections, phthisis pulmonalis, cripples, idiots, senility, leprosy, lupus, illegal pregnancy.

Other causes, ———.

And I further certify, that the sanitary condition of this city and vicinity is good, and that no contagious or infectious diseases exist, and I recommend that a clean bill of health be given said vessel.

——— ———,
Medical Inspector.

UNITED STATES CONSULATE AT BREMEN.

Subscribed and sworn to before me, this —— day of ———, 189 . Witness my hand and seal of office at Bremen.

——— ———,
Consul.

The following regulations are issued and enforced by the Bremen board of health:

INSTRUCTION FOR DISINFECTION.

A. The following disinfectants are to be used:

1. Lime milk.—One liter of broken, pure quicklime is mixed with four liters of water in the following manner: About three-fourths liter of the water is poured into a vessel and the lime placed therein; when the water has been absorbed by it, and the lime becomes pulverized, the rest of the water is added and stirred.

When not immediately used it must be kept in a tightly closed vessel and be shaken before using.

2. Chloride of lime has only a sufficiently disinfective effect when freshly made and kept in tightly closed vessels; it is recognized by its strong and peculiar smell. It is used either as a powder or in a solution. The latter is prepared by mixing 2 parts of chloride of lime with 100 parts of cold water, and after settling the clear solution is poured off.

3. Solution of kalisoap with carbolic acid. The crude carbolic acid is not used, but the so-called "100 per cent carbolic acid."

Three hundred grams of kalisoap (smearsoap) and 500 grams carbolic acid are dissolved in 10 liters of hot water. The best way is to stir the soap, first in some hot water, and then add, while stirring, first the carbolic acid and later the remainder of the water. This solution will keep a long time.

The pure carbolic acid is more expensive, but not more effective than the "100 per cent carbolic acid." The first dissolves readily in pure water, and the latter only in soap water. A 5 per cent solution is used.

B. The use of disinfectants:

1. The liquid dejections of cholera patients (vomit, excrements) are, if pos-

sible, caught in vessels and mixed with lime milk (I No. 1) in about even parts. This mixture must be kept at least one hour before it may be poured into the closet as harmless.

Chloride of lime (I No. 2) may also be used for the disinfections of the liquid dejections; at least 2 heaped tablespoonfuls of it in powdered form must be added to one-half litre of dejections, and must be well mixed. The so-prepared fluid may be removed in fifteen minutes.

2. Hands and all parts of the body which have come in contact with the liquid dejections (vomit, excrements of the patient, soiled linen, etc.) must be disinfected by cleaning them thoroughly with the chloride of lime solution (I No. 2) or with the carbolic acid soap solution (I No. 3).

3. Linen, bed linen, and wearing apparel must, after being soiled, at once be well moistened with carbolic acid soap solution (I No. 3) and kept in closed vessels or bags until called for by the medical assistant and taken to the steam apparatus for a thorough disinfection. Whoever has touched such articles must disinfect his hands in the manner as prescribed in (II No. 2).

4. Wearing apparel which can not stand this moistening process must be hung up to dry in the sick room, but before being taken away it must be wrapped in a cloth moistened with carbolic acid soap solution.

5. The floor and furniture of the sick room must be carefully and repeatedly rubbed off with a rag moistened with carbolic acid soap solution (I No. 3). The so-used rags must be burned.

The floor may also be disinfected by smearing upon it lime milk (I No. 1), which must afterwards be scrubbed off, but not until at least two hours have elapsed.

6. The walls of the sick room must be whitewashed with lime milk, if such can possibly be done.

The sick rooms must be left unoccupied for twenty-four hours, if such be possible, after having been disinfected, and must be frequently aired.

7. Clay or dirt floors, pavements, and gutters befouled by dejections of cholera patients must be disinfected by cleaning them with lime milk (I No. 1).

8. One liter of lime milk must be poured into the closet daily; the seat must be washed with the carbolic acid soap solution (I No. 3).

9. Articles of little value, especially the straw for bedding, must be burned.

THE BOARD OF HEALTH.

BREMEN, *August 9, 1892.*

CHOLERA IN BREMEN.

The total number of cases of cholera in this city during the past season was six. Four of the cases occurred among "lightermen" who came here directly from Hamburg; the two others were citizens of Bremen who were brought in contact with the first cases. Not a single emigrant had the disease; the last death was on September 6.

Consul Starkloff issued instructions to the proprietors of the boarding houses requiring them to report immediately at his office every case of diarrhea or vomiting, no matter from what cause it was said to arise, and a physician was immediately dispatched to the house to find out the cause of the disorder. The lodging house keepers were so much alarmed lest a case of cholera should develop in their houses that this regulation was rigorously carried out.

All the regulations made by the consul and the steamship company were printed in seven languages and posted conspicuously in every house, and the proprietors were directed to see that they were carried out without variation on penalty of having their name stricken from the roll of the company's list of boarding house keepers. It is said that diarrheal diseases were quite prevalent in Bremen and its vicinity during the summer and that a number of the emigrants were affected when in the city, but so thoroughly were the orders of the consul obeyed that the affections speedily disappeared, and it is believed that the immunity from disease of all kinds among emigrants was due to the precautions taken by the consul and the efficient and thorough aid given him by the steamship company, who promptly put his suggestions into practice.

Baggage is disinfected by sulphur fumigation, generally without opening the packages, and is done on the steamship company's wharves at Bremerhaven. The method of disinfection of baggage in bulk, which we have found practiced at all the ports thus far visited, seems to be considered sufficient to prevent infection from entering the United States. At each place we told the officials that we did not consider this proper disinfection, for the reason that the fumigation of the outside of a closed wooden box could not possibly affect any disease germs which might be within, and that this process gave a false sense of security, for the thoughtless person, assuming that the baggage had been disinfected, would take no further precaution, even if he had been previously in contact with some person having a contagious disease, and thus unintentionally spread the contagion.

At Bremen there are three rag exporters, but at the present time we were told that only one of them is shipping rags.

We visited this place and were informed by the proprietor, Mr. Achendorf, that all his rags were disinfected at the workhouse, the place of detention for petty offenders; to which institution we went. Requesting to be shown into the disinfecting chamber, we were taken to a room where bedding, clothing, etc., of persons in the hospital infected with contagious diseases are disinfected. It is a chamber made of boiler iron, about 10 feet long, 4 feet wide, and 7 feet high. The door, which is the full size of the front of the chamber, is made to close hermetically; the material to be disinfected is placed upon racks mounted on wheels, and pushed into the oven; the door is then closed and steam turned on, any pressure desired being obtained. The apparatus, which is quite simple but apparently effective, is the patent of Oscar Schimmel & Co., of Chemnitz, Germany. Expressing some surprise that the rags sent by Mr. Achendorf should be disinfected in so small a space, the superintendent of the establishment said: "Oh, they are not disinfected here," and took us into a small inclosure outside of the building, where we saw a large pile of rags on the ground. The disinfection, which was in process, was accomplished by squirting a weak solution of carbolic acid over the pile by means of a common garden syringe; they were then rebaled and branded "disinfected." Comment is unnecessary. The last shipment of rags made by Mr. Achendorf, certified as "disinfected," was on November 21, 1892, consisting of 280 bales.

We next called at the office of the North German Lloyd Steamship Company, and arranged a conference with them to be held the next day, Sunday, January 29. Accompanied by Consul Starkloff, we went to the office of the North German Lloyd Steamship Company, where we had an interview with Directors Marquardt and Bremmerman. We informed them of the object of our visit and they promptly offered to render us any assistance in their power. During the conversation they stated that they were in entire accord with Consul Starkloff concerning the necessity for a thorough physical examination of the emigrants and of the methods now in use at their boarding houses. It is their opinion that it is better to segregate the emigrants rather than put them into one large building, because in the event of contagious disease occurring only those in the boarding house where it appears will be contaminated. They have no boarding house in which there are more than twenty persons. They said that all ships are thoroughly disinfected before sailing by sulphur fumigation, the water-closets washed with a solution of creoline, the whole process of fumigation and disinfection being under the direction of a competent chemist who is made responsible to the U. S. consul and who verifies the completeness of his work by affidavit. The company purchased a house near their docks in which all disinfecting is done. During the continuance of the active epidemic of cholera the baggage of all passengers coming from suspected countries was opened and the contents taken out and submitted to sulphur fumes. When the disease subsided they did not open the packages, but disinfected the goods in bulk; and this is still done.

We were shown the plan of the building which they propose to erect to be used exclusively for disinfecting baggage. It is to be made of iron and practically airtight. We suggested that if cholera should reappear the U. S. Government might require the disinfection of all baggage, and that it might be necessary to open the boxes and spread the contents. They thereupon decided to modify the plan and arrange one part of the building so as to disinfect by steam heat, and reserve the other part for such articles as might be injured by steam, but which could be disinfected by sulphur. They agreed before deciding upon a permanent plan to consult an engineer with a view to carrying out the suggestions made. They said it would be their constant effort to carry out every requirement which the U. S. Government might suggest relative to improving the sanitary condition of their ships or increasing the comfort of the emigrant. At first they thought some of the requests made by Consul Starkloff were rather severe, but they now saw that the suggestions had been for their interests, even in a business point of view, and that they would be glad to continue the routine examination now carried on because they saved money by it in the end. They requested us to make any suggestions that we might think of which would in any way improve the methods in use, and they would gladly put them in practice. We then suggested to them the methods of disinfection which had been proposed by the steamship people of Antwerp relative to the disinfection of all baggage on the United States side of the Atlantic. While they thought the proposition excellent and one in which they might themselves wish to join, they preferred, as a matter of safety to themselves, to carry on such disinfection at their own wharf as the U. S. Government might direct. Disinfection of baggage before it was put on shipboard might prevent an epidemic of disease from occurring while the ship was on the ocean, and if it did so it would certainly obviate expensive quarantine proceedings in a foreign port.

January 30 called upon Consul Starkloff, who had just received information that Consular Agent Ihlder at Bremerhaven had authenticated some invoices sent to him by Wertheim & Co., of Cassel, consigning a quantity of rags to parties in New York. On Saturday last, January 28, Consul Starkloff received a letter, of which the following is a copy:

"CASSEL, *January 25, 1893.*

"SIR: Having some grounds to believe that the firm of Wertheim & Co., of this place, who are shipping rags to the United States, are not acting altogether square in the matter of having their invoices authenticated at the proper consulates where it should be done, I would respectfully suggest that you would be good enough, in case any invoices of said firm are offered at your consulate, to ascertain whence these goods originate. My reason for mistrusting that everything is not as it should be is this: Wertheim & Co. on the 7th instant sent a certificate of health issued by the Bezirks Vorsteter of this city (such as are usually sent with shipments of rags to America) to this agency for legalization, and stated at the time that the invoices for the goods would be presented for authentication within a week or so, but up to this day this has not been done, and I deem it very likely that the goods in question will be shipped from some other consulate.

"I am, sir, your obedient servant,

"J. C. KOTHE, *Consular Agent.*"

"Hon. HUGO M. STARKLOFF,
"*United States Consul, Bremen.*

To this letter Consul Starkloff replied that no application had been made to him for authentication of an invoice for shipment of these goods. On reaching his office this morning he found that Consular Agent Ihlder at Bremerhaven had authenticated the goods, which were as follows:

Invoice No. 14, dated January 25, 1893, consigning 439 bales of rags "to whom it may concern," at the port of New York on the steamship *Lady Blessington.*

Invoice No. 15, same date, consigning 178 bales of rags sent by Wertheim & Co. "to whom it may concern," at the port of New York, on the steamship *Senator Iken.*

Invoice No. 16, dated January 25, 1893, consigning 100 bales of old bagging to Henry N. Wolff, New York, sent by Julius Scharbau & Co., of Bremerhaven, by steamship *Senator Iken.*

Invoice No. 17, consigning 268 bales of old bagging and 112 bales of rags to Henry N. Wolff, New York, by Julius Scharbau & Co., on steamship *Senator Iken.*

Immediately upon the receipt of these invoices Consul Starkloff telegraphed to Consular Agent Ihlder, at Bremerhaven, to stop shipment of rags if possible. He received a reply that the ships had already sailed, the rags having reached Bremerhaven just in time to get them on board. Consul Starkloff said that this was the first instance of such an occurrence within his district, and he believed that some false representations must have been made to Mr. Ihlder, and insisted that we should go with him to Bremerhaven and make a thorough investigation of the subject. In view of the facts we decided to go to Bremerhaven, and arranged to leave the next day.

We then went to the rag establishment of A. H. Rissenburg, of Bremen, who, in response to our inquiries, said that he dealt only in old bagging, jute, and paper stock, which he sold to a firm in Hanover; that the articles were not disinfected by him. We then visited the establishment of Mr. Hagemeyer, who said that the rags he handled were all gathered near Bremen, and were disinfected at the workhouse by the methods already described. We went next to the warehouse of Mr. Achendorf, previously spoken of; he told us that he had arrangements by means of which he could disinfect about 20 bales per month, but that he sent out more than this; he said that the disinfection was done on the premises, in a room set apart for the purpose, under the supervision of one Dr. Pineti. Upon requesting permission to see the disinfecting chamber, he firmly refused to admit us, saying that it was locked up, and all his employés had gone away; we asked where the rags came from which he handled; he replied from Bremen and vicinity. We then asked him if he knew positively that none of the rags came from Hamburg, and his reply was, "I know nothing about it. I buy them from small dealers, and don't know where they come from; they may have come from Hamburg."

He said that he sorted the rags himself, and now employed about 80 sorters. When asked how many tons he could disinfect at one time, he said, "Oh, not tons; not more than 3 bales, and I leave them in the disinfecting room for two days." He was asked how Dr. Pineti assured himself of the proper disinfection of the rags; he replied, "We tell him that it has been done; the doctor does not stay on the premises." He would not say to which place he shipped the rags, but said he sold them wherever he could find a market, and was very anxious to open negotiations for the extension of his business in America. We were not taken into his warehouses, nor would he show us any of his methods. He said the disinfecting was done according to the U. S. Treasury Department circular. Before leaving we asked again to be shown his disinfecting chamber; he politely declined, saying that it was locked up. We have previously stated that we saw Mr. Achendorf's rags at the workhouse being "disinfected" by squirting some carbolic solution on them with a common garden syringe. This may account for his refusal to show us the disinfecting room "on the premises." In the evening we visited the consul's office, where we saw all the forms filled out in accordance with recent regulations, and which related to the sailing of emigrants who were to go to the United States on the steamship *Elbe* the next day, including the book kept by the examining physicians, in which is written out in full the physical condition of each passenger.

January 31, we took the early morning train for Bremerhaven, accompanied by Consul Starkloff and Dr. Wiegand, director of the North German Lloyd Steamship Company. Arriving at the wharf, we went on board the *Elbe* at Nordenheim, where we witnessed a rigid examination of every part of the ship by one of the directors of the company, who was accompanied by the ship's captain; the examination involved all that pertains to the sanitary condition of the ship and the comfort of the passengers. After leaving the vessel we went to the office of Consular Agent Ihlder. In answer to our inquiries concerning the invoices above mentioned, covering goods sent by Leopold Wertheim & Co., of Cassel, Mr. Ihlder said that the rags came to Bremerhaven a short time before January 19, but he could not give the exact date; the rags were in bales ready to go on shipboard. One Julius Scharbau, of Bremerhaven, came to see about their shipment. Mr. Ihlder told him that they could not be shipped without a certificate of disinfection; this was not forthcoming, but Mr. Wertheim sent Mr. Scharbau a power of attorney. Mr. Scharbau said that he had rented an old house and took the rags away; when he returned them he told Mr. Ihlder that they had been disinfected by sulphur fumes. We asked to see the house, but were told by Mr. Ihlder that the "whole place had been dismantled, and that there was really nothing to see." We could not obtain any definite information about the disinfection, by whom it had been done, nor who had given the certificate. Mr. Ihlder said that the certificate was made out by the man employed to do the work. We made every effort to see this man, but "he could not be found." After the rags were brought from the house they were put on board ship and sent to New York.

We asked Consular Agent Ihlder if he did not think this action of Wertheim & Co. somewhat peculiar; while he would not admit irregularity in the method, he said it did look strangely.

We asked Mr. Ihlder how many bales of rags had been recently shipped from Bremerhaven. His books showed that since November 2, 1892, until January 1, 1893, there were shipped from Bremerhaven to the United States 12,652 bales. He stated that most of them came from Hanover, but a few came from Trier, Riesa, Berlin, Magdeburg, and Cologne.

We were told that large quantities of rags were then being put on shipboard, and we were asked to go and see the method of "external disinfection" in use at this port. We went to the wharves and found the steamship *Ithamo* being loaded with rags bound for New York. Upon asking where the "external disinfection" was being done, we were taken to the side of the ship where the bales were being hauled up in the usual manner. There we found a man having in his hand a small garden sprinkling pot with which he sprinkled a few drops of a very weak solution (so weak that the odor was hardly perceptible) of carbolic acid on one side of the bale as it went up the ship's side. Not more than a teaspoonful could have been sprinkled on each bale, and this was the process of "external disinfection" in use at this place.

We went into one very large warehouse, filled with bales of rags awaiting shipment. We ripped open the seams and pulled out samples of the rags inside, for the purpose of detecting, if possible, the odor of sulphur, as all these rags were supposed to have been disinfected by fumigation in sulphurous acid gas. Although each member of the party (there were four of us) endeavored to detect the unmistakable odor of the gas, we were unable to do so. The only odor perceptible was the bad odor of the dirty rags, with which we were now quite familiar. Most of the rags in the storehouse at this time came from Hanover, and were branded with a stencil "Germany, disinfected." We saw the certificates in Vice-Consul Ihlder's office certifying that the rags had been disinfected, but it did not give the method, where it had been done, nor when: nor was there anything to show where the rags came from. The certificates set forth that "the rags were gathered in a country not infected by cholera:" yet the invoices show that they were shipped here from Hanover, Hamburg, Magdeburg, and Cassel, the latter not far from Nietleben, where a severe epidemic of cholera is raging. Sporadic cases are occurring in the other places mentioned, and it has not yet ceased in Hamburg, from which place rags are coming in large quantities, as there are now no restrictions upon the movement of rags anywhere in Germany.

We then visited the disinfecting chamber of the North German Lloyd Steamship Company. The building is of brick, is practically tight, and well arranged for the purpose, but is not large enough; hence the determination to build a much more extensive plant. Returning to Bremen, it was decided that as the territory over which we desired to travel was more extensive than we had imagined we would separate, and it was arranged that Dr. Irwin should visit Hamburg and vicinity, and Dr. Kempster should go to Hanover and Magdeburg, to meet at Berlin. In accordance with this arrangement Dr. Kempster left Bremen on the morning of February 1, going to Hanover, to which place Consul Starkloff accompanied him. Arriving there we went at once to the office of Consular Agent W. B. Murphy, to whom we stated the reasons for our visit. From his invoice book we obtained the number of bales of rags which had been sent from Hanover to Bremerhaven for shipment to the United States since November 1, 1892, until January 30, 1893. The number was obtained from the original invoices on file in the office, and the total number of bales shipped in three months was found to be 14,568. By referring to the figures which we obtained from Consular Agent Ihlder at Bremerhaven, it will be seen that the number of bales of rags shipped from Hanover alone to Bremerhaven exceeds the total number said to have been sent by Agent Ihlder from Bremerhaven to the United States by 1,916, without taking into account the bales which have been shipped to Bremerhaven from other places by other rag exporters. Mr. Murphy said that he had never visited the establishments of the rag exporters here, and knew nothing personally about the disinfection. He said the rag exporters employed their own inspectors, and that he merely certified to the genuineness of the signatures appended to the certificates. The records of the office show that one of the inspectors is Dr. Max Mündheim, who was appointed and paid by the firms of Jacob Solomon and J. Katzenstein & Son. Mr. Murphy said that he had nothing whatever to do with the appointment and knew nothing about the processes of disinfection.

There are no municipal regulations requiring the disinfection of rags, nor is Dr. Mündheim a sanitary officer. Mr. Murphy did not know how often the disinfecting chambers were visited by the doctor, and he knew nothing further about the subject than that the two large exporters in this city bring affidavits for the consular certificate attesting to the genuineness of the signature of Dr. Mündheim.

Mr. Murphy stated that all the rags sent from Hanover go to Bremerhaven or Geestemunde. He said that the agency had never received any instructions from the Treasury Department concerning the certification of the disinfection of rags, and all that was done had been arranged for by his brother, who is the regular agent at this place, but now absent on leave in America.

The form of certificate used in this agency which accompanies the invoice of rags contains the following clause: "That no cholera or other contagious disease or diseases prevail at present in or near the city of Hanover or have come to my official notice."

The returns from the sanitary authorities of Hanover, which are forwarded from this agency every week to the Surgeon-General of the Marine-Hospital Service, show that for the week ending January 18, 1893, there were then in Hanover typhus fever, diphtheria, scarlet fever, and measles; and that deaths from each disease had occurred during that week. It was suggested to Mr. Murphy that hereafter it would be at least prudent to note on the margin of the certificates sent by him to the United States that such diseases are prevalent in the city, if such should be the fact.

We were informed that Mr. Jacob Solomon, an exporter of rags, did not like to sign the blanks issued by the consul, so he prepared his own and filled them out, Mr. Murphy merely certifying that the signatures were genuine. Mr. Solomon, one of the largest exporters here, and who has other rag warehouses in Germany, forwards his rags to Felix Solomon, of Nassau street, New York; Mr. Katzenstein, the other exporter, sends to whomsoever purchases.

Accompanied by Consul Starkloff and Mr. Murphy, we went to the warehouse of Jacob Solomon to see his disinfecting room. We were taken to a large brick building, two stories high, about 100 feet long, 40 feet wide, and 24 feet in height. Mr. Solomon asked if we would like to see the inside; on being answered in the affirmative he took hold of a wooden shutter and opened it; the window sash beneath was open, being raised to its full height. Looking into the room we found there were two tiers of crude wooden racks, on which rags were spread to the depth of 4 or 5 inches. Although it was said they were then disinfecting, there were not fumes enough to seriously affect breathing, nor was it possible that there could be, for a number of windows were open full width, besides numerous broken panes of glass in the sashes. It was not possible to disinfect anything in the room as we saw it. We requested permission to go upstairs. Mr. Solomon replied that there was too much sulphur in the upper room. Repeating the request, he at last unlocked the door and we walked up. The room was the same size as that below, and there were two tiers of racks in it on which the rags were placed. On one side of the room were eight large windows; in each window one or more panes of glass were broken out. Sulphur fumes were not sufficient to prevent us from remaining in the room long enough to complete our examination and to determine that the process in use was of no value. This is one of the establishments which employs Dr. Mündheim, who certifies that the rags have been "duly disinfected in accordance with Treasury Circular No. 143." It is also one of the largest exporting houses in Germany. In response to our inquiries Mr. Solomon stated that no case of contagious disease had occurred among his employees which could be traced to the handling of rags, and that he had never known a case of sore finger (anthrax).

We next visited the establishment of Katzenstein & Sons, and requested to be shown the disinfecting room. We were at once taken to a room containing 120 square metres floor space and about 14 feet high. There were no doors, the large entryway into the room being covered by coarse blankets hung up like portieres. On one side of the floor the rags were piled up in a continuous row 4 feet deep, a platform raising them about 6 inches from the floor. The rags, however, were piled against the wall of the room, so that there could be no circulation underneath the platform if it had been intended. The entire floor was covered with rags from 3 to 4 feet deep, except some small circular spaces in which the sulphur pots stood. The fumes did not prevent a complete examination of the room, the openness of the structure making it a matter of impossibility to retain them; the disinfection of course being worthless. We told the proprietor that the rags were piled up too high on the floor, that the fumes could not possibly reach into them. The response was that they put in a few rags at a time, scattering them at intervals of about two hours, and that the room was refilled four times in twenty-four hours, the work of refilling being carried on while the sulphur was burning.

It is due to Mr. Katzenstein to say that, in our judgment, the inefficiency of the process was because of lack of knowledge how to do it; the firm relying entirely, so they said, upon Dr. Mündheim's assurance that the rags were fumigated in accordance with the requirements of Circular No. 143. Both firms said that all the rags handled by them were gathered in the province of Hanover; when asked for particulars on this point, they both replied that they bought of small dealers, and did not know exactly where the rags came from. Mr. Solomon had previously informed us that at this time he received a good many rags from Hamburg which he "disinfected," and then sent to the United States by way of Bremen. The rags we saw here had been collected, they said, during the summer and autumn, and came from all parts of Germany where there had been and still are cases of cholera, and where there are at this time cases of typhus fever, scarlet fever, and diphtheria. The method of disinfection is of no value whatever, and does not in any respect conform to the requirements of Circular No. 143, yet every bale is branded "Germany, disinfected," and is admitted to the United States under a certificate of disinfection signed by a man who visits the establishments but seldom, and who certifies that it is done in accordance with Department circulars.

The following are the forms of certificates in use at this agency:

U. S. CONSULAR AGENCY,
Hanover, ———, *189* .

I, ——— ———, of the firm of ——— ———, Hanover, do solemnly swear and truly declare that each and every bale in the invoice No. ——, dated ———, 189 , of —— bales of rags shipped by steamer ———, from ——— to ———, are domestic German rags and not reshipments; and further, that the rags thus shipped have neither been collected, packed, or otherwise placed or passed through any district or districts infected with cholera or any other infectious disease.

——— ———,
Of the firm of ———.

U. S. CONSULAR AGENCY,
Hanover, ———, *189* .

I, ——— ———, consular agent of the United States of America at Hanover, do hereby certify that the signature of ——— ——— at the foot of the above paper is his true and genuine signature, made and acknowledged in my presence, and that the said ——— ——— is personally known to me.

In witness whereof I have hereunto set my hand and affixed the seal of the consular agency at Hanover, this day and year next above written.

——— ———,
Consular Agent of the United States.

U. S. CONSULAR AGENCY,
Hanover, ———, *189* .

I, ——— ———, consular agent of the United States of America at Hanover, do hereby certify that from official information received from the sanitary authorities of ———, I am convinced that no cholera exists in or near the city of Hanover, and that to the best of my knowledge and belief no cholera or other contagious or infectious disease or diseases prevail at present in or near the city of Hanover or have come to my official notice.

——— ———,
Consular Agent of the United States.

The following is Dr. Mündheim's certificate:

I, Max Mündheim, medical doctor, do hereby certify that the rags mentioned in the invoice hereto annexed, consisting of —— bales, have been duly disinfected under my direction and inspection in the manner prescribed by clause 3 of circular note order No. 143, issued by the Hon. O. L. Spaulding, Secretary of the Treasury, on August 19, A. D. 1892, and that I am fully satisfied that the rags so disinfected by me are free from cholera or contagious or infectious disease.

HANOVER, GERMANY, ———, *189* .

U. S. CONSULAR AGENCY,
City of Hanover, German Empire.

I, the undersigned, consular agent of the United States of America at Hanover, Germany, do hereby certify that the signature of Dr. Max Mündheim, medical doctor, above written, is his true and genuine signature. I further certify that the invoice No. ——, which covers the wares referred to in the above medical certificate, shows that these rags were shipped to the United States from the port of Bremen.

Witness my hand and the official seal of this consular agency this —— day of ———, A. D. 1893.

——— ———,
U. S. Consular Agent.

As above stated, Mr. Solomon will not use the first blank issued by the consular agent, and has one of his own, of which the following is a copy:

We do hereby solemnly and sincerely declare on oath that the ———, together ——— bales of disinfected rags under consular invoice No. —— shipped by us from ——— per steamer ——— to New York, have been bought and placed in our rooms since before the cholera appeared in Hamburg, and that they were collected in our city and the districts free from cholera or other contagious disease and packed in the time there was no cholera here.

HANOVER, GERMANY, *January* ——, *1893.*

Declared to before me this —— day of ———, 1893.

——— ———,
U. S. Consular Agent.

We were informed by Mr. Murphy that not long since there was an outbreak of smallpox among the employés of Mr. Solomon's establishment, which was traced by the sanitary authorities of Hanover directly to a quantity of rags which had been brought there from some other town.

February 2 left Hanover for Cassel, reaching the latter place at 11 p. m. On the morning of the 3d called upon Consular Agent G. C. Kothe, who informed us that there were two rag warehouses in this city—Wertheim & Co. and Nathan Abt. The latter has no disinfecting chamber, and he did not know where he sent the rags.

The last shipment made by Wertheim & Co. was on this date, February 3, and consisted of 642 bales consigned "To whom it may concern" in New York. They go from Bremen on the steamship *Akabe.*

Dr. Karl Suth superintends the disinfection. We were told that he is not a Government official, is not a sanitary officer, nor is he in any way connected with or recognized by the municipal authorities as an inspector. He is appointed and paid by Mr. Wertheim; he comes to the consulate whenever an invoice is made and swears that the rags have been disinfected according to Treasury circular, method No. 3. Mr. Kothe said that he had never visited the warehouses and does not know anything about the disinfection; that he translated Department circular No. 143 into German and gave it to Mr. Wertheim, but he knows nothing further about the matter. Accompanied by Mr. Kothe we visited Mr. Wertheim's place; he was then absent and the person in charge objected to showing us the disinfecting room. We persuaded him to telephone to Mr. Wertheim, who at once granted the necessary permission, and we were conducted into the third story of a large warehouse. What they called the disinfecting room was about 150 feet long, 40 feet wide, and from 16 to 18 feet high. On one side of the room there were bins about 6 feet wide by 14 feet deep; the partitions between the bins were openwork with a 2-inch mesh. On the bottom of the bin, 14 inches above the floor, was a platform, on which the rags were spread 3 feet deep; under the platform there was a small iron pan, in which it was said the sulphur was burned; in the wall opposite the bins the windows are placed, 6 feet apart, the entire length of the building; many panes of glass were broken. We were informed that the employés continued to work in this room while the rags were being "disinfected." It may be readily understood there was no disinfection at all. The invoice of rags mentioned above, forwarded to-day, had been "disinfected" in this room, the bales branded in the usual manner, and there were a large number of bales then on hand awaiting shipment, marked "Germany, disinfected." Our informant stated that the rags were gathered "all about here;" he acknowledged, however, that they were purchased from small dealers, and that it was therefore impossible to tell where they came from. He said that the stock on hand was gathered during the autumn, while cholera prevailed in Germany, and that they are now "disinfecting" the rags and sending them to New York via Bremen. The certificate of Dr. Karl Suth sets forth that the rags have been duly disinfected according to method No. 3 of Department circular No. 143.

In the evening Mr. Wertheim called at the hotel, and said during his conversation that he was willing to build any kind of room that was thought best by the United States officials in which to disinfect the rags. When we explained to him what the Department circular required, he promised to begin work in the morning and make the present room as tight as possible. It should be said that there is no attempt made to confine the fumes of sulphur to the bins, and that they permeate every part of this large establishment. Dr. Suth, he said, left the entire matter of disinfection in their own hands, simply making the required certificate when the invoice was brought to him.

Wertheim & Co. are the parties who sent the rags to Bremerhaven for shipment to the United States without disinfection, which we described in the account of our visit to Bremerhaven.

February 5, returned to Berlin and joined Dr. Irwin.

February 6, called at the United States legation and requested the chargé d'affaires to procure for us such official documents issued by the German Government which in any way referred to the epidemic of cholera or to the importation or exportation of rags.

We then called upon Consul-General Edwards, who informed us that rags from Berlin are generally sent to Stettin for shipment to the United States, and that large quantities are being shipped from there at this time. Consul. General Edwards has made a thorough examination into all matters pertaining to the disinfection and forwarding of rags to the United States. In speaking of the shipment of rags and of the certificates which are forwarded with each invoice, he said that an oath administered by a consul or consular officer in Germany was not binding, and that a person making a false oath before a consul could not be punished, and that most of the shippers knew it. In explanation of this statement, he said that the German Government has decided that an oath is not legally binding which is not administered in a prescribed place and before a German official; therefore, any person who desires to take advantage of this circumstance can do so with impunity.

February 7, took the 6:30 morning train to Magdeburg, and on arrival went to the office of Consular Agent Albert H. Washburn, who informed us that no invoices of rags had been authenticated at that office for a long time, the last direct shipment having been made in the autumn of 1891. Accompanied by Mr. Washburn we went to the rag establishment of Mr. Edward Klaue. The proprietor informed us that he was now and for some time past had been sending about 100 tons of rags per month to Mr. Jacob Solomon, of Hanover, who now shipped all the rags for him; that he found this a better way than to send them himself.to the United States; that most of the rags he shipped went via Stettin. He said he did not disinfect his rags, and had no arrangements to do so. He sorts them here and prepares them for shipment, dividing them according to the methods usual in the trade. When asked where the rags came from he replied, "Around here" I asked him if he could not double his present output, providing he had a regular order for shipment to the United States. He replied, "Oh, yes; my rags come from Thuringia; I could write to my agents there to send me 200 tons a month or even more; I could arrange to begin shipping them as early as the 1st of March:" that he would like to do so if he could make arrangements with American firms, but that under his present contract he sent his entire output to Mr. Solomon.

The Mr. Solomon mentioned is the same person whose establishment we visited at Hanover, and who assured us that all his rags were gathered from the immediate vicinity of Hanover.

The statements of Mr. Klaue show that rags are forwarded from Thuringia to the United States and that they go by way of Stettin.

The territory from which the rags come which pass through the hands of Mr. Jacob Solomon covers a large part of the German Empire instead of being gathered in the country immediately about the city of Hanover. Mr. Klaue said that the rag business was very profitable now, and that he would like to make contracts at present prices and send his goods direct to America, as he could then draw against the shipment invoices. He said that nearly all his goods went to New York and did not differ in any way from the usual trade goods. Like the other dealers visited, he received rags in loose bales, sorts and prepares them in the usual manner, and packs them in bales ready for exportation.

Official statistics of the German Empire show that outside of the city of Hamburg there were in the several localities mentioned below during the autumn of 1892 cholera cases as follows, and it is from these places that many of the rags were gathered:

	Cases.		Cases.
Altoona	882	Saxony	24
Hanover	383	West Prussia	15
Pomerania	98	City of Berlin	30
Brandenburg	78	The two Mechlinburgs	95
Rhine Province	29	Hamburg up to November 17	19,647

CHOLERA IN MAGDEBURG.

The first case of cholera in this city was reported on the 29th of August, 1892 and on the 30th two other cases, all three coming from Hamburg on boats. Only one case occurred among residents of the city, and it is not known whether he had been in contact with the boatmen. There was another death in October, and this person came from Hamburg. The municipal authorities took prompt action, keeping the city scrupulously clean and establishing excellent sanitary rules, which were posted at a number of public places in the city as well as on bill boards. There were, in all, 12 cases and 6 deaths. One great danger remains. The city is supplied with water taken from the Elbe, and nothing has yet been done to secure a supply from other sources, or to purify the water from this source.

Returning to Berlin on the morning of February 28 I was joined by Dr. Irwin, and we called at Consul-General Edwards's office, who gave us further information concerning the rag establishments in Berlin. As in the other places heretofore visited, each of the exporters appoints an inspector, who is paid by the firm employing him, and over whom the consul has no supervision, and of whose methods he knows nothing.

Appreciating the danger there was from the importation of disinfected rags into the United States, Consul-General Edwards sent a dispatch upon the subject to the State Department, which was dated August 26, 1892, in which he said: * * * "I desire to add a word of warning in respect to the danger that must come to us through the importation of rags.

"Large quantities of rags are awaiting shipment at Hamburg.

"It is but an hour and a half by rail from Hamburg to Bremen, and not many hours by water from Cuxhaven to Bremerhaven. There is danger of the Hamburg rags reaching our shores by other than the Hamburg steamers.

"It is absolutely impossible for a consular officer to ascertain definitely the names of the places where rags are gathered, consequently it is quite out of the question for him to determine whether any part of a shipment comes from an infected district.

"There is actual danger wrapped up in every bale of rags which comes to our shores, and the only efficient way to disinfect them is to burn them.

"The strictest possible watch on the part of consular officers must prove ineffective in keeping shippers from shipping rags from an infected district in Germany to a district that has not been officially declared to be infected.

"There should, in my opinion, be no distinction made between the restrictions placed upon the importation of rags from infected and from noninfected districts.

"I should keep them all out of the country, but so long as our authorities see fit to admit them, I beg most respectfully and most earnestly to urge that shippers of rags will not willingly submit to regulations which they regard as restrictions upon their trade. They are pretty certain to evade our regulations as often as the chance comes by shipping their rags from a noninfected district without regard to where they gather them.

"An effective watch can not be maintained over any rag gatherer's movements.

"I have the honor to be, sir, your obedient servant,

"W. H. EDWARDS, *Consul-General.*

"Hon. WILLIAM F. WHARTON,
"*Assistant Secretary of State, Washington, D. C.*"

From Mr. Edwards we learned that when exporters in Berlin send rags to the United States on an invoice "to whom it may concern," the cost of disinfection is charged at the rate of 2 marks per bale, but that when they are consigned to a person named in the invoice the cost of disinfection charged by the same shipper is 1 mark per bale. It is impossible for consular officers, said he, to keep track of the shipment of rags owing to the decision of the Treasury Department, which, by circular dated July 29, 1891, permits rags to go out of one consular district to another because there is no duty on them, and dealers are not required to produce before the consul the original bills of purchase required from those who ship goods subject to duty when they apply for an invoice. Therefore any rag exporter in southern Germany may send his rags to an exporter in northern Germany or elsewhere and there obtain an invoice without difficulty; and this, he said, had been done through the entire autumn, and is being done at this time by exporters in Berlin. Consul-General Edwards said that the only certificate he makes is to the genuineness of the signatures of the parties before him, and that he makes no certificate concerning disinfection.

From Berlin there had been sent to the United States, as shown by the invoices since December 27, 1892, until February 7, 1893, as follows: Via Stettin, 2,429 bales of rags; via Bremerhaven, 1,109 bales of rags.

These two ports are the only ones through which rags may be shipped to the United States at present.

February 9 we visited the establishment of Levy & Streich, one of the largest exporting houses in Germany.

The warehouse is a five-story brick building, and every part of it was full of rags which had been "gathered in Germany." The proprietor said they tried to get rags from districts which had not been infected by diseases; but that, as a matter of fact, he had no knowledge of where the rags were gathered. They employ about 100 sorters, and deal in all sorts of rags, linens, white, colored, new cuttings, flax waste, etc.

He told us that rags going to the United States were disinfected on the premises; they employ their own inspector, who certifies that the rags have been properly disinfected. The inspector visits the establishment "when he thinks it necessary." Being asked if they marked the bales which were disinfected, they said "Yes," and produced a stencil which is kept in the office, the bales being branded by one of their own men who is under no supervision of any kind.

At our request we were shown the disinfecting room, in which the sulphur was then burning. It is 60 by 45 feet and 10 feet high. There is one rack about 4 feet from the floor, on which the rags were spread to the depth of a foot, and where they remain for six hours, "unless we are pressed for time, in which case we change them more frequently."

They commenced disinfecting on the 15th of December last, and disinfect about 150 tons a week. We asked for the daily quantity disinfected. They said 20 tons. Sometime afterwards, however, they corrected this statement, and said they could only disinfect from 10 to 15 tons per day. At this time all their rags are sent to Stettin for shipment. There are no checks of any kind upon the process of disinfection. Anyone may go to the room, as the key is in the door, and it might be emptied and filled a dozen times without the "inspector" knowing anything about it. Any number of bales may be stenciled "disinfected" which they choose to mark, and when so branded they go to the United States without restriction.

We next visited the establishment of Lewy Bros, another large warehouse, which was full of rags, and there were piles of bales stacked in the yard outside as high as the second-story windows. The proprietors told us that they purchased their rags from other dealers and forwarded them to their branch house in New York, this method being more satisfactory than sorting and disinfecting them. They accept all certificates of disinfection which come with the rags, and send them to the United States without knowing where the rags came from or the processes of disinfection employed. They said, "We would not knowingly purchase rags where any contagious disease was epidemic." Being questioned closely upon this point, they said, "We make no special effort to find out where they come from or whether contagious diseases exist in the neighborhood, for this would be impracticable."

They do not regularly disinfect rags, but have a room which is used for this purpose "in case of necessity," and it was in use on the day of our visit. The room has 240 square meters floor space and is about 11 feet high. In it are two tiers of racks on which the rags are laid to the depth of 12 inches. The room has windows on both sides about 6 feet apart, which were not tight, as there were broken panes of glass in both upper and lower sashes. The volume of vapor in the room did not prevent entering for the purpose of examination. They told us their inspector came whenever he thought it necessary; that he is employed and paid by the firm, and is under no other supervision. There is no supervision of any kind over the process of disinfection, if such it can be called, as the doors are unlocked. They keep their own stencil plate and mark what bales they please. The sorting and disinfecting by this firm is a minor item, most of their rags being purchased on commission; but they state that they disinfect all rags here which have not been disinfected before arrival. In response to our inquiries they said that they employ about 80 women, and that not a case of contagious disease has ever occurred in their establishment that could be attributed to handling rags, and that they have never known a case of anthrax among the employés.

The members of this firm have lately gathered statistics from the rag warehouses of the Continent relative to the danger of contagion from rags, and they have published a pamphlet containing the results of their investigations, copies of which they gave us, which will be mentioned hereafter.

We next visited the warehouse of Samuel Meyer & Co., another large rag exporter. This firm also deals in paper shavings. They employ 120 women as sorters, who handle the paper shavings and other stuff. He had never known any of their sorters to have sore fingers (anthrax) or any form of contagious disease. They send their rags to America via Bremen or Stettin, as may be most convenient. He said that he shipped some rags to England, but none to Holland or Belgium; that he has in stock at this time about 300 tons. He said that he disinfects about 60 bales at one time, and that the process is under the supervision of a chemist who comes to see the rags distributed and the sulphur turned on; there is no other supervision, and the key of the door remains in the possession of the firm, and no seal is used. The disinfecting chamber is in the second story of a large warehouse, the room being about 30 feet square and 12 feet high. There are two windows in the room, but they are tight. The arrangements for introducing sulphurous-acid gas are different from any other place we have visited. On the outside of the room, next to the door, stands an iron cylinder about 5 feet high and 8 inches in diameter. A pipe is laid from the cylinder into the room along the ceiling, and from this depends a gas pipe. The cylinder contains sulphurous acid gas under pressure, which is furnished by a chemist in the city. In the disinfecting room there are no racks, the rags being piled on the floor. When all is ready the door is closed, "and the gas from the cylinder turned on for six minutes and then shut off," the rags being permitted to remain in the fumes for six hours. One cylinder, he said, "will furnish enough gas for fifty fumigations." Mr. Meyer said that his rags came from Prussia alone, and principally from around the city of Berlin, and that he received no rags from Saxony.

The other establishments in Berlin have no disinfecting chambers, and as we desired to move as rapidly as possible they were not visited.

The following forms are used by the consul-general in Berlin:

U. S. CONSULATE-GENERAL,
Berlin, ———, *189* .

I, ——— ———, consul-general of the United States of America at Berlin, do hereby certify that from official information received from the sanitary authorities of ———, dated ———, and on file with this consul-general, no cholera ——— prevails in or near the city of Berlin, and that to the best of my knowledge and belief no cholera or other contagious or infectious disease or diseases prevail at present in or near the city of Berlin or have come to my official notice.

——— ———,
Consul-General of the United States.

U. S. CONSULATE-GENERAL,
Berlin, ———, *189* .

I, ——— ———, duly authorized agent (partner) of the firm of ——— ———, Berlin, do solemnly and truly declare that each and every bale in the invoice No. ———, dated ———, 189 , of ——— bales of rags shipped by steamer ———, from ——— to ———, are domestic rags and not reshipments, and, further, that the rags thus shipped have neither been collected, packed, or otherwise placed or passed through any district or districts infected with cholera or any other infectious disease.

——— ———,
Of the firm ———.

U. S. CONSULATE-GENERAL,
Berlin, ——, *189* .

I, —— ——, consul-general of the United States of America at Berlin, do hereby certify that the signature of —— —— at the foot of the above paper is his true and genuine signature, made and acknowledged in my presence, and that the said —— —— is personally know to me.

In witness whereof, I have hereunto set my hand and affixed the seal of the consul at Berlin this date and year next above written.

—— ——,
Consul-General of the United States.

It is worthy of remark that the firm of Lewy Bros., who have just published a pamphlet embodying statistics gathered from the principal rag establishments and paper mills in Europe, are among those dealers in Berlin who "solemnly and truly declare" before the U. S. consul-general that the rags shipped to the United States "have neither been collected, packed, or otherwise placed or passed through any district or districts infected with cholera or any other infectious disease." Yet they stated to us that they sent rags to the United States without knowing where they came from, and in response to direct inquiries said, "We make no special effort to find out where they (the rags) come from, or whether contagious diseases exist in the neighborhood, for this would be impracticable."

If the statistical matter furnished by the rag dealers to Lewy Bros., which they publish in the pamphlet, is as trustworthy as the information furnished by Lewy Bros. to the consul-general the accuracy of the statistics may be fairly called in question.

The pamphlet prepared by Lewy Bros. is entitled—

Die Cholera-Gefahr und der Lumpenhandel.

The cholera danger and the rag trade.

It is addressed to the Imperial Board of Health in Berlin, and purports to give the data obtained from 686 European paper and shoddy manufacturers and rag warehouses. It is not necessary to reprint the whole pamphlet because it contains much that is foreign to the present investigations. It first enumerates the difficulties experienced by those engaged in the business by reason of the embargo which is placed upon the movement of rags from cholera-infected countries, but it says that "the prejudice of the Government (German) against the trade in rags was well known, and that an embargo might be expected at any time," and indicates that the date of the embargo might have been determined by the German Government, so as to have enabled the dealers to stop the shipment of rags before the embargo took effect. It says, further, that the shipments of rags going "to the United States have been furnished with health certificates ever since 1885, and one German firm alone is said to have paid for that purpose consular fees to the sum of 20,000 marks." The pamphlet contains a list of fifteen questions which were sent out to those engaged in the rag trade, and to which they requested answers. In brief, the questions asked the lengh of time each dealer had been in the business, the number of employés, whether cholera had ever visited their place, how many employés were taken sick or died from that disease, whether any other disease or diseases occurred among the employés, and if so what they were and whether they could be undoubtedly caused by infection from rags; also, whether any of the diseases were probably caused by infection from rags. The pamphlet then contains the following: "The circulars were sent to all firms in Europe having any connection with the rag trade known to us and to those near us, but only to the largest paper mills having connections with the trade in rags in Germany. It is supposed that on account of the large consumption of wood fiber the paper mills were not much interested in the rag trade, especially in Austria, where a high duty is levied on the export of rags, thereby almost prohibiting it. Several German paper mills have not sent replies to the questions proposed. even upon a second invitation. Many replies were unsatisfactory and incomplete therefore it took time to get the addenda."

The answers to the questions are in the main so indefinite or so purposely evasive as to be valueless for exact data, but they show that there have been epidemics of several forms of disease in the establishments from which answers were sent. Following the answers published, it is found that from the German paper mills which sent answers—

No. 49 admits smallpox.

No. 51 admits smallpox from rags sent from a hospital in Dusseldorf.

No. 52 admits smallpox.

No. 53 admits smallpox.

From shoddy factories in Germany—

No. 141 admits smallpox, undoubtedly infected by rags.

No. 142 admits "28 men and women taken down with smallpox, infected by rags sent from France; were treated in a hospital. Other cases were taken with the disease and were treated at their homes."

From Austria the cases of so-called "rag disease" are reported, which will be mentioned in another place—

No. 22 admits 10 cases of rag disease.

No. 24 admits smallpox.

No. 25 admits rag disease.

No. 26 had 27 cases of rag disease in 3 epidemics, all ending in death.

No. 27 admits rag disease.

No. 28 admits rag disease.

No. 29 admits "a few cases of affection of the lungs."

No. 30 admits "a few cases of smallpox caused by infection from rags."

From Switzerland—

No. 3 says that in 1886 they had women sick with smallpox, supposed to have been infected from rags.

From England—

No. 126 says "three assorters were affected with smallpox some twelve years ago; it is thought that they caught the disease from assorting bad-smelling, dirty woolen rags."

No. 127. "Two cases of smallpox, which are supposed to be caused by infection from rags."

Among the most significant answers are these.

In the following, given in answer to our questions, we record the number of cholera cases, classifying as workmen those who did not sort rags:

No. 1. Paper mill (Eberswalde, 1866), 10 nonassorters taken sick, 5 died.

No. 10. Paper mill (Malmedy, about 1852), 5 to 8 nonassorters taken sick, a couple of them died.

No. 25. Paper mill (Calbe Saale, 1873), 1 nonassorter taken sick and died.

No. 27. Paper mill (Berlin, 1866), 1 nonassorter taken sick and died.

No. 35. Paper mill (Eberswalde, 1873), 3 nonassorters taken sick, 2 died.

No. 43. Paper mill (Glauchau, 1866), 1 assorter and 1 nonassorter taken sick, both died.

No. 27. Rag-trading house (Königsburg, 1866–73), 1 assorter taken sick.

No. 241. Rag-trading house (Hamburg, 1892), 1 assorter taken sick and died, * * * about 40 replies from Hamburg.

No. 274. Rag-trading house (Posen, 1866), 1 assorter taken sick and died.

No. 11. Paper mill (Arnau, 1852), 5 nonassorters taken sick.

No. 20. Paper mill (St. Petersburg, 1860–92), 1 assorter taken sick and died, also 135 nonassorters taken sick and 22 died.

No. 46. Rag-trading house (Saratoff, 1892), 2 assorters taken sick.

No. 47. Rag-trading house (Samara, 1892), 1 assorter taken sick.

The pamphlet was prepared to disprove the assertion that cholera was or might be propagated by means of rags, yet here they mention by name 13 establishments in which the work people had cholera.

While they do not say directly that the cholera was introduced by means of rags the language can not well be interpreted otherwise, for in speaking of those among the rag sorters who died they say "2 cases should be deducted (from the whole number), as infection from other causes had been established;" the inference is, therefore, that the other cases were infected by the rags. They say in relation to the cholera, "While it is true that the result of this inquiry is not infallible it shows the small number of cholera cases among the workmen in rags and speaks clearly against all embargo on the rag traffic."

Many of the answers admit the existence of disease at the establishments without specifying it, as follows:

"We have never found that rag sorters were sick more than other employés." Another said, "It is well known that the respiratory organs of those employed on rags suffer more than those, for instance, of paper assorters."

Again, "During smallpox epidemics, influenza, etc., our employés suffered very little." Another replied from Austria, after reporting deaths from "rag disease" as above, "The older sorters withstood the two last influenza epidemics better than the younger ones." Another answers, "Cases of lung inflammation among them (sorters) were milder than among the rest." Several respond that they have had "a few cases of smallpox." One in Austria answers (No. 182), "Let me observe that it is much better to burn immediately the old clothes which come from hospitals rather than to sell them, for fear they might be worn again and thus greatly increase the danger of spreading cholera."

Another answers: "Some cases of a skin eruption which may or may not have been caused by rags."

Another answers from Leghorn, Italy: "The number of cholera patients who have been employed in handling rags was less than those of other branches."

In the summary it is stated that "noncholeraic infection is either positive or not improbable in 29 establishments" from which answers were received. The authors then say: "We do not deny that infection, especially of smallpox, has occurred, but considering the great number of establishments and the number of years of observation we claim that the figures furnish no cause for a wholesale attack on the rag trade." And then they add the words following, which we italicize: "*Attention should be paid to the thorough disinfection of the clothing of smallpox patients before they are thrown among the rags.*"

The summary also shows that there were "170 cases of cholera, 38 of them fatal," in the several establishments from which they received replies, excluding 15 cases of this disease reported from the "machine shop" attached to a paper mill, which they say should not be added. It is significantly stated by them that "the field of observation is, therefore, not one that could wisely be considered preeminently exempt from cholera."

The most ardent sanitarian does not demand more than the authors of this pamphlet admit, to wit: That rags do convey contagion, and that thorough "disinfection of the clothing of smallpox patients" should be performed. Why they should limit "thorough disinfection" to clothing from smallpox patients is not clear, inasmuch as they report "noncholeraic infection" from rags in 29 places, one recommending that clothes from hospitals should be burned for fear of spreading the cholera.

No people in the world are better acquainted with the impossibility of accomplishing thorough disinfection of any rags picked up in the usual manner before they reach the large warehouses than the wholesale dealers, as it is impossble to tell smallpox rags or infected rags of any kind from other rags. The only practical way to deal with them is to disinfect all of them; and this plan is absolutely necessary to prevent the introduction of infection wherever the rags are sent, and can only be properly done where large quantities of rags are handled.

The pamphlet does not inform us of the number of places in England to which the questions were sent. They give only three answers. Two admit infection of smallpox by rags; the other reports "state of health has always been good." If the questions were sent to all the rag dealers and paper mills in England a very large percentage of them did not reply correctly or the answers were not published, for it will be shown elsewhere that more than seventy outbreaks of smallpox, besides other forms of contagious diseases introduced by rags, have been reported in England after thorough investigations made by the health officers had established the facts; and it is also shown that many epidemics of disease have occurred in other countries introduced by rags.

The pamphlet contains an answer from one of the Austrian paper mills in response to the question as to what was meant by "rag disease," which is as follows:

"By rag disease is meant a malady only lately observed not unlike anthrax, and frequently so considered, which attacks those who handle the rags in paper mills, almost without exception the women, and which nearly always ends in death. The disease is supposed to be caused by the inhalation of the dust arising in large quantities in assorting and cutting rags.

"The disease shows itself with or without premonition, beginning with languor, fatigue, and a painful pressure in the stomach." "Then follow difficulty in breathing, oppression, anguish, often cough and pain in the chest, generally no fever; if so, only in the beginning. There is a weak but very rapid pulse, a subnormal temperature, and a bluish discoloration of the skin; the strength fails, and death occurs in from two to five days."

This disease has been observed in other places, as will be shown elsewhere.

The paragraphs selected from the pamphlet have a direct bearing upon the subject we were investigating, to wit, the liability of rags to carry contagion; and it furnishes interesting data in support of this view coming from a variety of sources and from those directly interested in the business.

February 1, 1893, arrived in Hamburg and called on Consul Estes, who informed us that there are a number of establishments where disinfecting processes are carried on, but owing to the embargo on rags from Hamburg they are now used for other things. Disinfection by sulphur is used in all of them, and the inspection of the methods is under the supervision of a chemist who is appointed by and under the control of the chamber of commerce. The chemists before entering on their duties are obliged to file an affidavit that they will properly perform the duties of the work assigned. The salaries of the chemists are paid by the merchants who use the disinfecting chambers. The following warehouses in Hamburg have disinfecting plants attached to them: P. H. Bauer & Co., J. Ferdinand Nagle, and Leopold Brandt. These merchants deal in various articles which require disinfection. The first visited was Leopold Brandt, who sells hides, feathers, and hair; he does not deal in rags. They were about to commence the process of disinfection of sundry bales of hair as we reached the warehouse. The room used was practically air-tight; it is built of brick, covered with stucco, and without windows, having only one door of entrance. The dimensions are as follows: 23 feet long, 11 feet wide, and 10 feet high. In this room 9 pounds of sulphur are burned at each disinfection. The hair is not unbaled, but the bales were ripped open in three places. Before our inspection had terminated Dr. Karl Enoch arrived. The sulphur was ignited; the door closed and locked. Dr. Enoch covered the keyhole with wax, and stamped it with his seal. He said that at the expiration of six hours he would return, break the seal, and open the door; but that it would be at least four hours thereafter before the contents would be removed. He stated that it was an offense punishable by imprisonment for anyone to break the seal except himself.

Mr. Brandt said that the disinfecting process as we saw it went on every day; that he had more orders for hair, hides, and feathers than he could possibly fill.

In conversing with Vice-Consul Burke he said that he believed rags were being shipped from Harburg, a town opposite Hamburg, to Geestemunde for shipment to America. The consul does not allow old bagging, or flax waste, to be shipped from Hamburg, but in view of instructions received from the Treasury Department does not consider himself warranted in stopping the shipment of "new cuttings."

We next visited the rag warehouse of A. Wertheim & Co., who informed us that they had done no business in rags since August 25, 1892.

In Harburg is the warehouse of Mr. Solomon (the proprietor of the establishment at Hanover). We were informed by the manager that they shipped last week to England 600 bales of rags, and they expect to ship 400 more this week.

Accompanied by Consul Estes and Vice-Consul Burke we next visited the office of the directors of the Hamburg-American Packet Company, and met three of the directors; the object of the visit was stated, and after some conversation we were referred to Dr. Nash, who they said was employed by the company to supervise all matters of disinfection and the examination of emigrants.

Dr. Nash soon entered the room, and in conversation he stated that he had exclusive control of disinfection and of the medical examination of emigrants He also said that he was one of the deputy health officers for the port of New York, but that he is paid a regular salary by the Hamburg-American Packet Company. The medical inspection of emigrants is not even supervised by the U. S. consul, nor is any question relating thereto referred to him, being carried on by two physicians in the employ of the company and under the supervision of Dr. Nash. At the date of our visit the company dispatched two steamers a week to New York, and they carried an average of 150 passengers in each vessel. Until the epidemic of cholera appeared here, which resulted in the suspension of the steerage traffic, the Hamburg-American Packet Company never carried second-class passengers, except on their fast steamers. The ordinary slow vessels carry only first-class and steerage passengers; now the steerage accommodations have been transformed into quarters for second-class passengers. All ships of the company are disinfected and fumigated before sailing, this being done under the supervision of the police department of Hamburg; the officials send a certificate of disinfection to the U. S. consul for each vessel. The consul attaches to this document a certificate of authentication in addition to the usual bill of health.

Mr. Estes said that no clean bill of health had been furnished vessels leaving Hamburg since the 23d of August, 1892. Two vessels a month belonging to this line are now sailing for New York from the port of Stettin.

According to appointment, we met Dr. Nash at 2 p. m., and went to the baggage room of the Hamburg Company; there was very little baggage to be disinfected at the time of our visit. Trunks, boxes, and locked packages are treated, by rubbing their external surfaces with a solution of bichloride of mercury, 1 part to 500, but they are not opened. Goods in sacks are opened, and their contents exposed to the fumes of sulphur; for this purpose a lighter had been tied up close to the baggage room; the contents of the bales or sacks were transferred to the lighter and hung on clothes lines, and the hatches closed and covered with tarpaulins during the process of disinfection; this work was done daily under the supervision of Dr. Nash.

We then went to the examination room, where all passengers pass a medical inspection. There are present at these examinations a surgeon employed by the steamship company, a police agent, and Dr. Nash. We visited the steamship company's docks, where we examined the steamship *Moravia*. She was being cleaned and painted throughout. The former steerage quarters in which cholera appeared during the summer of 1892 have been entirely remodeled and fitted up for second-cabin passengers. The steamship *Normannia* was also there; her refitting had been completed, and we were told that she would begin running to New York in March. We next inspected the barracks for emigrants. This is a large building in good sanitary condition. It is a temporary structure, and was finished and occupied just before the cholera epidemic appeared here in 1892. There are separate accommodations for men, single women, and families. There is a fairly good waiting-room, where refreshments may be had. The floor of this room, which is cement, was quite dirty, as the emigrants were constantly tramping in and out. The beds throughout the establishment are the usual iron racks holding four people, one above the other. The water-closets are cesspools, which we were told are cleaned out every day. There are good bathing facilities, and each emigrant is compelled to take a bath as soon as he arrives. The whole place is under the control of the police department of Hamburg. All emigrants coming to this place are brought direct to the barracks and are not allowed to enter the city. At the date of our visit there were 360 emigrants waiting for their ship to sail. Vice-Consul Burke stated that during the period of the epidemic he visited these barracks every day, and they were about the healthiest place in the city, only nine cases of cholera occurring there during the season.

The next morning, accompanied by Consul Estes, we went to Grasbrook, an island in the Elbe, lying between Hamburg and Harburg; we first inspected the disinfecting establishment of P. H. Bauer & Co. The building is of galvanized iron, riveted together so that it is practically air-tight, and has a felt roof; there are no windows, and only one small door; outside the building about 20 feet distant, there are three iron retorts for burning the sulphur; these retorts are connected with the interior of the building by three 5-inch iron pipes, which run under ground and terminate in the center of the disinfecting chamber. The dimensions of the room are 40 by 40 feet and 16 feet in height. Mr. Bauer stated that his business was that of disinfecting by sulphur, and that he frequently disinfected hides, feathers, and wool. There are no racks in the building, but with this exception the plant is all that could be desired. Mr. Bauer said that he had as yet disinfected no rags, because Hamburg rags were not allowed to land in America. He said, "There is not the slightest doubt but that these rags are being sent to America by way of Geestemunde, as there are no restrictions on the movements of rags from one place to another in Germany, and, as it is impossible to tell Hamburg rags from any other rags, there is no reason why they should not go if their owners wished to send them." He said further that it was very easy to evade the regulations against the shipment of Hamburg rags, for, said he, "At Finkenwarder (a division of Hamburg), one side of the street is in Hamburg and the other in the province of Hanover, and it has never been forbidden to ship rags from Hanover." On the same island is the disinfecting establishment of J. Ferdinand Nagle, which has been recently built. It is constructed of wood, the roof covered with felt; no windows, and but one door. Outside the building is one large iron retort for burning sulphur, the fumes of which are delivered into the chamber by a 5-inch iron pipe, placed underground; there are no racks in the place. Hides, wool, and feathers are disinfected both at this place and at Bauer's establishment. The process of disinfection is carried out under the supervision of one of the Government chemists heretofore mentioned.

February 4, 1893, we took the morning train for Hamburg, accompanied by Vice-Consul Burke, where we inspected the rag establishment of Solomon Bros., which is a large warehouse. They employ at this place 150 sorters, and, as usual, we were told that there had never been a single instance of contagious disease among the employés. The elder brother stated that he had been in the business forty-five years and had never known a case of contagious disease or sore finger occurring among the sorters (but see p. 152, ante). He said they purchased their rags from small dealers, and they came from Scandinavia, Denmark, Schleswig-Holstein, Mechlinburg, Saxony, Westphalia, and the Rhine provinces, also from Hanover. He said they did not get rags from Russia or Austria, because of the export duty, which, in Russia, is 4 gold rubles per 100 kilos (about $3.08 on 275 pounds), and in Austria the export duty is 4 gold florins per 100 kilos ($1.92 for 275 pounds). We were shown over the entire establishment. Expressing surprise at the immense stock on hand, Mr. Solomon said there were about 5,000 tons of rags in stock; but the enormous piles indicated that this was a low estimate. The last shipment made direct to the United States by this firm was in the latter part of August, 1892. Mr. Solomon stated that there was no difficulty at all in shipping rags from infected districts to the United States if the exporters were disposed to do so, because they could be readily sent from one consular district to another. He stated that the English Government did not now require the disinfection of rags, and since restrictions had been removed, which had been recently done, they had been sending rags to that country. On the day of our visit to this place they had received an order from England for 1,000 bales of rags. We afterwards learned that these rags were all sent from England direct to the United States. We were told that they could now disinfect about 10 tons a day, but by working night and day they might increase the quantity to 15 tons. They said further that if they were permitted to ship rags direct to America they would be willing to increase their disinfecting plant to 25 tons a day. A good many rags are sold to mills in Germany, the Government requiring that all their official blank forms must be printed on paper that is made from rags. We next visited their disinfecting room, which is a large wooden shed built against a brick wall. In the roof there are numerous skylights. In the walls about the room there are a good many large cracks, and also in the several doors. At one end of the shed are two tiers of wooden racks which occupy about one-third of the floor space. At the time of our visit the racks were filled with old paper which they said they were about to disinfect. The dimensions of the room were 51 by 42 feet and 12 feet high. They said that they could disinfect in this room all of the material which they are now permitted to send to America, including "new cuttings." The disinfection, we were told, was done under the supervision of a Government chemist, Dr. Minthe. They acknowledged, however, that the inspector did not lock or seal the doors when he left the place, and that he did not remain on the premises during the process of disinfection, which they say lasts for six hours.

The proprietors indicated a willingness to erect a suitable building for disinfecting purposes which shall answer all the requirements of Department circular No. 143, providing it became necessary to do so.

In the evening we met the directors of the Hamburg-American Packet Company, and at their request explained to them the general features of the proposed quarantine law now before the Congress of the United States. They expressed themselves as being much pleased with the provisions of the law, and said they would rejoice to see a uniform quarantine administration in the United States, and would very gladly cooperate in any way they could to make such a law successful, whether the requirements would demand concert of action on this side or only at ports in the United States.

The directors of the Hamburg-American Packet Company afforded every possible facility for making all the examinations we desired, in every part of their extensive wharves and docks, through their vessels, and in every department connected with the forwarding of emigrants and the disinfection of their baggage, and everything was found in excellent condition.

CHOLERA IN HAMBURG.

The first case of cholera in this city officially reported was on the 23d of August, 1892. It is said, however, by the committee of the senate who have charge of the sanitation of the city, that the first case occurred on the 18th of August, and it has not yet disappeared. On the date of these notes, February 1, 1893, a case was officially reported in the Neustadt, one of the quarters of the city. The official figures given by the Hamburg authorities for the epidemic are as follows: From the 18th of August, 1892, until February 1, 1893, the total number of cases was 18,000; total number of deaths, 8,200.

The financial loss to the city as a consequence of the epidemic is estimated at 15,000,000 marks a day. Vice-Consul Burke said that the clean bill of health which he authenticated for the steamship *Normania* was dated on the 16th of August, two days before cholera was reported, and a week before it was officially announced.

There can be little if any doubt that the authorities of Hamburg endeavored to prevent the existence of cholera from becoming known, and it was not till it became a matter of general conversation on the streets that the presence of the disease in epidemic form was officially announced.

The drainage of the city is well arranged, but branches of the Elbe River radiate through the city in various directions, and being stagnant become very filthy. The sewers do not discharge directly into the branches and canals, but the refuse material finds its way into them by the action of the tides from the main river into which the sewers and drains empty, thus rendering the stagnant waters a constant menace to the city. The water supply is taken from the Elbe above the city, and when the new filtering apparatus and other measures, which are in process of construction at this time, shall have been completed, it is believed that the water supply will be pure. It is stated that the frightful ravages of the cholera were due to the fact that the river water became contaminated and carried the germs of the disease into all parts of the city, by reason of the fact that the methods of filtration were at the time imperfect. Located in various parts of the city there are about 70 wells, from which drinking water is raised by pumps. We saw several of these which had notices upon them stating that the water was potable and free from cholera germs, the notice in each case being signed by the cholera commission. Around these pumps there seemed to be no precautions taken to prevent the sloppy water from finding its way back into the well. As at present managed these wells may become a very dangerous element in spreading disease.

On the day before our visit Dr. Koch inspected the city of Hamburg, and we were told by the authorities that he approved all the measures taken to improve its sanitary condition, including the arrangement for the new water supply; and that he believed that the sanitary authorities were now in a position to hold the disease in check.

The following blanks are in use at this consulate:

BILL OF HEALTH.

We, the senate of the free and hanseatic city of Hamburg, do, at the request of Capt. ——— ———, master of the ——— vessel called ———, moored in the port of this city, and bound for ———, by these presents certify and attest that neither in the city nor in the port and its vicinity does exist any extraordinary, contagious, epidemical disease which could be transferred by the ship, her crew, or cargo.

In witness whereof, we have granted these presents and caused our usual seal to be affixed thereto.

HAMBURG, ——— the ——, 1892.

To this is affixed the seal of the senate. Upon this bill of health the U. S. consul affixes the following:

U. S. CONSULATE, *Hamburg.*

I, ——— ———, consul of the United States of America at Hamburg, do hereby certify that the seal of the Hamburg senate and signature of ——— ———, secretary, to the instrument of writing hereto annexed, are true and genuine, and as such are entitled to full faith and credit.

In testimony whereof, I have hereunto subscribed my name and affixed my seal of office this —— day of ———, 189 .

It was the refusal of the consul to attach this certificate to the senate bill of health as above, because he believed the cholera existed in epidemic form in Hamburg, that first called public attention to the actual condition of affairs.

BILL OF HEALTH.

CONSULATE OF THE UNITED STATES OF AMERICA,
Hamburg, ———, 1892.

I, the undersigned, consul of the United States of America for the port of Hamburg, do hereby certify that the ——— called the ———, of ———, of the registered burden of —— tons, whereof ——— ——— is master, navigated by ——— men, and having on board ——— passengers, being in all ——— persons on board, is about to leave this port for ———.

I hereby further certify that in this port and vicinity and among the shipping thereof good health prevails, without any suspicion of plague or cholera or any epidemic disease whatever.

Given under my hand and seal at this consular office the day and year above written.

——— ———,
U. S. Consul.

Pasted upon each bale or parcel or package is the following:

"Certificate of disinfection for within goods authenticated by me ———, 189 .

"——— ———,
"*U. S. Consul.*"

February 7 we visited Stettin and called on U. S. Consul Dr. J. C. Kellogg, who informed us that since the 25th of August, 1893, there have been but three shipments of rags from Stettin direct to the United States, and they were sent January 7, 10, and 13, 1893, and that they went by way of Hull, England.

The following week a large shipment was to be made on the steamer which will then leave for the United States direct. There are here three exporters of rags—H. J. Levy, Berthold Levy, and A. Joseph—all having disinfecting plants; and besides rags, they disinfect hair, hides, feathers, jute, and old bagging. Disinfection is done under the supervision of the consul and a Government chemist, Dr. Gustave Laube.

The consul informed us that he intended to be present at all disinfections and watch the entire process, and that he certified the signature of the chemist, Dr. Laube. It is the custom of both these gentlemen to go to the disinfecting room and see the rags distributed on the racks and the sulphur ignited, the door locked, the keyhole covered with sealing wax, on which is stamped the chemist's seal, which may not be broken thereafter except in the presence of one of these officials. We first visited the disinfecting room of H. J. Levy & Co., situated on the second floor of the warehouse. Its dimensions are 35 by 20 feet and 8 feet high. In it they disinfect 48 bales at a time. He said the rags came mostly from the province of Pomerania. They employ 37 sorters, none of whom ever had a contagious disease or "sore finger" which could be traced to the rags. Most of the rags go to the United States.

February 8, visited the establishment of A. Joseph, accompanied by the consul and Dr. Laube. The disinfecting room is a brick building, with wooden roof and skylight. Two large racks cover the surface of the room, the lower one resting directly on the floor, the rags being piled about 1 foot high on each. The room is tight, and an excellent one for the purpose when the lower rack is lifted from the floor. In it they can disinfect 15 tons at one time. The rags are sent to the United States, sometimes via Hull and sometimes direct. He employs 45 sorters, and he said that sometimes they had sore fingers, which he thought was produced by their coming in contact with the iron cradles on which the rags are placed before sorting. He said it was customary when this soreness came on for them to stop work for a few days and the trouble passed away. He had never known a case of contagious disease among his sorters which could be traced to the rags.

The next place visited was Berthold Levy's, who has a disinfecting chamber on the third floor of his warehouse; in it a wooden rack covers the floor space, on which rags are laid 6 inches deep. He disinfects 10 tons at one time, most of his rags going to the United States. He employs 50 sorters, and had never known any of them to have contagious disease or sore finger. The disinfecting room is well adapted for the purpose intended.

U. S. Consul Kellogg, who is a physician, has taken unusual interest in the matter of rag disinfection, as the following communication made to the Department of State demonstrates:

U. S. CONSULATE, *Stettin, March 25, 1893.*

SIR: In order to test the efficacy of the disinfection of rags by means of sulphurous-acid gas, as prescribed by the circular of the Treasury Department under date of August 19, 1892, Dr. G. Laube, a sworn expert analytical and technical chemist at the royal court of this city, and I, who have had much experience as a former pupil of the eminent analytical chemist, Geheimhofrath, Prof. Dr. R. Fresenius, of Wiesbaden, Germany, in analytical work, made recently a series of qualitative and quantitative analyses of disinfected rags which had been disinfected by the different rag exporters of this city under our personal direction and supervision. The disinfection of rags is, and has always been, made in the evening.

The rags, after the disinfecting rooms are closed and sealed by Dr. Laube and myself, are left exposed during the night to the sulphurous-acid fumes. Previous to the disinfection the rooms are made, so far as possible, air-tight.

The samples of disinfected rags we examined and tested qualitatively and quantitatively were collected in the morning after the disinfection had taken place and after the rooms had been aired. The samples were taken as follows:

1. *From racks which are parallel to the floor, elevation one-half to 1 foot.*

(*a*) From the interior of the rag piles.
(*b*) From the exterior of the rag piles.

2. *From racks which are parallel to the floor, elevation 3 to 8 feet.*

(*a*) From the interior of the rag piles.
(*b*) From the exterior of the rag piles.

Preparation of the samples for the qualitative analysis.

Two hundred and fifty grams of each sample were macerated with 1,000 grams of water in glass vessels. The percolate thus obtained measured 200 c. c., which represented 50 grams of disinfected rags. To this 200 c. c. of percolate 5 c. c. of dilute sulphuric acid were added, transferred into a retort, and by means of a Liebig condenser distilled until the distillate amounted to 150 c. c. To this 50 c. c. of water were added, increasing the volume of the liquid to 200 c. c., which was used for the tests as follows:

Chemical tests of sulphurous acid SO_2 (the smell of SO_2 gas was distinctly present).

1. Reaction upon metallic zinc plus dilute muriatic acid, which caused sulphureted hydrogen gas to be generated. Proof of test with lead paper, causing the same to become brownish black in color.
2. Reaction upon nitrate of silver solution, causing a white, cheesy precipitate of Ag_2SO_3, which on boiling turns gray, caused by the precipitation of metallic silver.
3. Reaction upon sulphureted hydrogen gas, causing a milky-white coloring of the liquid, due to the precipitation of sulphur.
4. Reaction upon chloride of gold, causing on boiling a purple-brown precipitate of metallic gold.
5. Reaction upon mercuric nitrate, causing on boiling a gray precipitate of metallic mercury.

The above reactions were obtained readily from each sample of disinfected rags tested, while a counter test of samples of nondisinfected rags gave none of the above characteristic reactions of sulphurous acid.

QUANTITATIVE ANALYSIS.

These analyses were made to ascertain the quantity of sulphurous acid absorbed by the samples of disinfected rags examined. The preparation of the samples was made in the same manner as for the qualitative analysis; 250 grams of each sample were collected. The percolates were distilled until the several distillates amounted to each 100 grams, which represented 25 grams of disinfected rags. Each 100 grams distillate was treated with permanganate of potassium solution (titration method) of such a concentration that 1 c. c. of the solution would neutralize 0.005 gram of sulphurous acid.

The following results were obtained:

(A) Samples taken from racks which are parallel to the floor, elevation one-half to 1 foot.

Sample No. 1, from the interior of the rag piles, contained 0.026 gram SO_2 in 25 grams rags.

Sample No. 2, from the exterior of the rag piles, contained 0.042 gram SO_2 in 25 grams rags.

(B) Samples taken from racks which are parallel to the floor, elevation 3 to 8 feet.

Sample No. 3, from the interior of the rag piles, contained 0.038 gram SO_2 in 25 grams rags.

Sample No. 4, from the exterior of the rag piles, contained 0.058 gram SO_2 in 25 grams rags.

(C) Samples taken from racks which are parallel to the floor, elevation one-half to 1 foot from the interior of the rag piles.

Sample No. 5 contained 0.068 gram SO_2 in 25 grams rags.
Sample No. 6 contained 0.026 gram SO_2 in 25 grams rags.
Sample No. 7 contained 0.047 gram SO_2 in 25 grams rags.
Sample No. 8 contained 0.046 gram SO_2 in 25 grams rags.
Sample No. 9 contained 0.034 gram SO_2 in 25 grams rags.

(D) From the interior of the rag piles (three-eighths foot elevation).

Sample No. 10 contained 0.070 gram SO_2 in 25 grams rags.
Sample No. 11 contained 0.048 gram SO_2 in 25 grams rags.
Sample No. 12 contained 0.105 gram SO_2 in 25 grams rags.
Sample No. 13 contained 0.085 gram SO_2 in 25 grams rags.
Sample No. 14 contained 0.049 gram SO_2 in 25 grams rags.

The above results show that the disinfections of the rags from which the samples were taken were effective. A better control, however, of the rags disinfected by means of sulphurous-acid gas can best be obtained by having rags first baled and then disinfected in vacuum.

For obvious reasons the disinfection of rags on this side, by means of superheated steam or boiling water, is impracticable. These two methods are better adapted for those disinfections made in the ports of entry in the United States.

I have the honor to be, sir, your obedient servant,

James C. Kellogg,
U. S. Consul.

To the Hon. William Wharton,
Assistant Secretary of State.

The experiments show that when properly disinfected the sulphurous-acid gas penetrates all the rags distributed upon the racks.

Relative to methods taken for the supervision of emigrants sailing from this port, Consul Kellogg stated as follows:

The regulations of the city require that all passengers sailing from Stettin must be examined by the police authorities, but Dr. Kellogg states that the official on duty endeavored to conform to his wishes in every respect, and that he himself is present at the examinations. The physician who makes the examinations is paid by the Hamburg Packet Company.

The number of emigrants sailing from Stettin annually number from 4,000 to 6,000.

The vessels are disinfected by the police sanitary authorities, Dr. Kellogg being present.

It has been customary when the ships are being disinfected to place the baggage of the emigrants in the hold of the vessel, where it is fumigated by sulphur, all trunks and boxes being opened, but the contents are not removed. The baggage of Russian Jews is disinfected by steam. At present no emigrants are sailing from this port. There were but 16 cases of cholera in Stettin during the year; the first case September 11, 1892; the last case October 16.

The following are the blanks in use at this consulate:

U. S. Consulate,
Stettin, ———, *189* .

I, ——— ———, duly authorized agent (partner) of the firm of ——— ———, Stettin, do solemly and duly declare that each and every bale in the invoice No. ——, dated ———, 189 , of —— bales of rags shipped by steamer ——— from ——— to ——— are domestic rags and not reshipments; and, further, that the rags thus shipped have neither been collected, packed, or otherwise placed or passed through any district or districts infected with cholera or any other infectious or contagious disease.

——— ———,
Of the firm of ———.

U. S. Consulate,
Stettin, ———, *189* .

I, ——— ———, consul of the United States of America at Stettin, do hereby certify that the signature of ——— ——— at the foot of the above paper is his true and genuine signature, made and acknowledged in my presence, and that the said ——— ——— is personally known to me as a creditable person.

In witness whereof I have hereunto set my hand and affixed the seal of the consulate at Stettin this day and year next above written.

——— ———,
Consul of the United States.

U. S. CONSULATE,
Stettin, ———, 189 .

I, ——— ———, consul of the United States of America at Stettin, do hereby certify that from official information received from the sanitary authorities of Stettin, dated ———, and on file in this consulate, no cholera or other contagious diseases prevail in or near the city of Stettin, and that to the best of my knowledge and belief no cholera or other contagious disease or diseases prevail at present in or near the city of Stettin, or have come to my official notice.

——— ———,
Consul of the United States.

STETTIN, ———, *189 .*

I herewith certify that I have ordered and watched personally over the disinfection of ———, marked ———, and that this has been done in conformity with the regulations prescribed for it, to wit: The disinfection took place in a tight and locked room filled with sulphurous acid gas made by burning 4 pounds of roll sulphur to each 1,000 cubic feet.

DR. G. LAUBE,
Sworn Chemist to Law and Commerce.

U. S. CONSULATE,
Stettin, ———, 189 .

I, ——— ———, U. S. consul at Stettin, do hereby certify that ——— bales of (or hides, hair, or wool), marked ———, were put into an air-tight room for disinfection according to methods prescribed by the circular of the U. S. Treasury Department, dated August 19, 1892, under the personal direction and supervision of a sworn analytical chemist of this city and myself.

Given under my hand and the seal of this consulate the day and year as above written.

——— ———,
U. S. Consul.

U. S. CONSULATE,
Stettin, ——— 189 .

I, ——— ———, U. S. consul at Stettin, do hereby certify that the hold and steerage quarters of the ———, leaving this port for the port of ———, have been disinfected under my supervision, according to the following methods:

1. Cleansed with bichloride of mercury solution, 1 part to 1,000.
2. Flushed with water.
3. Exposed to sulphurous acid gas for twelve hours.

I also certify that the effects of the steerage passengers, excepting those of the Russian emigrants, have been disinfected according to method No. 3 above mentioned; that the effects of the Russian emigrants have been disinfected by being exposed one hour to steam heat and that the Russians themselves have been bathed and kept not less than one week in the isolated barracks where they had been examined.

Given under my hand and the seal of this consulate the day and year as above written.

——— ———,
U. S. Consul.

STETTIN, ———, *189 .*

By reason of official investigations made, I herewith certify that the city of Stettin and environs are free from infectious and contagious diseases and that the state of health here is very good.

DR. SHULZE,
The Medical and Sanitary Inspector.
(Kreisphysicus.)

February 10, left Berlin for Dresden and called upon U. S. Consul Aulick Palmer, who explained to us the method employed by him for supervising the disinfection of rags.

First, he requires the only exporter here, Barth & Son, to furnish a written statement from any steamship or railway company conveying the rags, showing where the rags were put on board; and he exhibited to us the original statements made by the transportation companies certifying at what places the rags were put on their respective lines. These certificates are signed by the railway superintendent at Reisa, where the rag warehouse is located, also by the agents of the steamboats which carry the rags. These certificates show that all rags received at this place come from southern Germany. In addition to these certificates the consul requires an additional certificate from the town authorities of Riesa, in which they state that, to the best of their knowledge and belief, the rags come from towns which are not infected by cholera or other infectious diseases. Next, the consul employs an inspector, who is also the superintendent of disinfection, whose business it is to go to Riesa whenever the disinfecting rooms are ready, who seals all doors and openings with the consular seal, notes the hour of closing the room in a book that is kept for that purpose, which we saw; also the hour of opening the same. He keeps the key in his possession during the period of fumigation, and when the fumigation is complete (at the end of six hours) he breaks the seal over the keyhole and unlocks the door, and the rags are then thrown down chutes into the room below, where they are baled in the presence of the inspector; he then stencils the bale, and marks his initials with the date and number of the bale under the stencil; then the rags are released by him for shipment. The number of bales reported by the inspector to the consul must of course tally with the number of bales covered by the invoice. Old bagging and flax waste are disinfected, but "new cuttings" are not, because an order from the Treasury Department admits them without. Here, as at all other places visited, they come to the warehouse mixed with all sorts of rags.

The inspector acts independently of the proprietors and assumes the supervision of the rags from the time that they are distributed upon the racks until they are baled and ready for shipment.

After obtaining this information we visited the establishment at Riesa. It is a large warehouse located on the river Elbe; they employ 150 sorters, all women. The proprietor told us that "nearly every one of the sorters is affected with some sort of throat trouble which the doctor called bronchitis, and which is caused by the 'rag dust' arising from the 'cradles' on which the rags are cut or torn to pieces; and that the difficulty lasted about four weeks from the time the sorters began work. During this period they have a severe cough and some are compelled to quit work."

We visited the sorting room and saw the process. While the room was fairly ventilated it was still full of rag dust, which had the bad odor which we had noted in all other similar establishments. We visited the disinfecting chamber, in which there are two tiers of racks about 2 feet above each other; the racks were being filled with rags at the time of our visit, to the depth of from 2 to 3 feet. From 150 to 200 bales are disinfected at each time. The disinfecting rooms were not tight and there were broken panes of glass in them, and the excessive depth of the rags on the racks prevented perfect disinfection, and we so informed the inspector, who promised to correct these imperfections.

The proprietors said that while it was desirable and they wished to get rags from noninfected communities, yet it was impossible for them to tell where the rags were gathered, because the small dealers from whom they bought received rags from ragpickers who went, no one knew where. Most of the rags go from here to Boston and New York via Bremen. The proprietor said that formerly many rags came from Russia, but at present they are forbidden to enter Germany. Rags from Bohemia are much sought after because they are linen, and most of the cloth is handmade and very strong, furnishing material for the manufacture of the best grades of paper. Russian rags are sought for the same reason.

Before leaving Germany we obtained a copy of the new law relating to the prevention of contagious diseases, which we give herewith.

[From the Deutsche Reichs-Anzeiger and Königlich Preussische Staats-Anzeiger of February 6, 1893. Official organ.]

SKETCH OF THE LAW IN RELATION TO THE EXTIRPATION OF CONTAGIOUS DISEASES, DANGEROUS TO THE PUBLIC HEALTH.

We, William, by the grace of God German Emperor, King of Prussia, etc., decree in the name of the Empire with the consent of the Bundesrath (Federal Council) and Reichstag (Imperial Diet) as follows:

NOTICE.

SECTION 1. Each case of sickness and each case of death caused by cholera (Asiatic), spotted fever, yellow fever, plague (Oriental), smallpox; also, each case suspected to be one of these diseases must be immediately reported to the local police authorities and to the physician appointed by the Government; furthermore, each case of typhus of the intestines, diphtheria, including croup, relapsing fever, dysentery, scarlatina, must be immediately reported to the local police authorities.

If the place of residence of a patient is changed it must be reported at once to the local police authorities of the new place.

These regulations may, by a resolution of the Bundesrath, also refer to other contagious diseases.

Regulations requiring other legal notice are not affected by the above.

SEC. 2. This notice must be given, in the absence of the first-mentioned party, in the order as they follow:

(*a*) By the attending physician; (*b*) by the party attending the patient; (*c*) by the head of the family; (*d*) by a member of the family, who is of age and lives in the same house; (*e*) by other members of the household; (*f*) by the owner or occupant of the house in which the case of sickness or death occurred.

SEC. 3. Each case of puerperal fever or death caused by it, even if only suspected, must be immediately reported by the attending physician, or in the absence of one by the midwife, to the Government physician appointed for the district in which the case occurs.

SEC. 4. In case of disease or death in a public hospital, lying-in hospital, nursery, prison, or other similar institutions, the superintendent of the same, or the party appointed by him for that duty, must make report. For all cases of disease or death occurring on board of a vessel or raft report must be made by the captain or by the party appointed by him for that duty.

The Bundesrath has the power to enact regulations as to whom the captain or his deputy shall report.

SEC. 5. Notice may be given verbally or in writing. The local police authorities must furnish, upon request, notification blanks free of cost.

Discovery of diseases.

SEC. 6. The local police authorities must at once inform the Government physician when they hear of any outbreak or of a suspicious case of a contagious disease enumerated in section 1. The physician must at once investigate the matter and the cause of the disease, and must at once report to the police authorities whether or not the outbreak or suspected case is established.

In extreme cases, the investigation may be made by the Government physician without waiting for instructions from the local police authorities.

In places of more than 10,000 inhabitants the rules given in section 1 must be observed, even when cases of disease or death occur in localities separated from the others and formerly not affected,

After the establishment of the disease the Government physician, in conjunction with the local authorities, will investigate the several cases so far as is necessary for the purpose of following up the spread of the disease locally and in regard to time.

In cases of cholera, spotted fever, yellow fever, plague, and smallpox, the administration may order an investigation in each case of disease or death.

SEC. 7. The Government physician has the right to examine the patient or the dead body, also to make the necessary examination as to the origin of the disease and of the case itself. The attending physician may be present at these examinations. If there is the slightest suspicion of the deceased having succumbed to cholera, spotted fever, yellow fever, plague, smallpox, typhus of the intestines, or relapsing fever, an autopsy may be made to establish the disease, if such is advisable in the opinion of the Government physician.

The parties mentioned in section 2 and section 4 are bound to give all information as to the origin and the course of the disease, when so requested by the Government physician.

SEC. 8. If the Government physician reports that an outbreak of the disease has been established, or that the suspicion of an outbreak is well founded, the local police authorities must at once take all the necessary measures for protection.

SEC. 9. If the outbreak of cholera, spotted fever, yellow fever, plague, or smallpox has been established, the local police authorities will at once make this fact publicly known. The number of cases of sickness or death must be published at short intervals.

SEC. 10. If there is danger of delay, the Government physician is authorized to order the necessary measures for protection, to prevent the spread of the disease, without notice from the local police authorities. In such cases the warden of the place must obey the instructions of the Government physician, who again will immediately inform the local police authorities of the means adopted.

Measures for protection.

SEC. 11. To prevent the spreading of contagious diseases (sec. 1), the regulations as given in sections 12 to 20 for the isolation and inspection may be ordered by the police authorities.

Opposition to these regulations will not postpone their enforcement.

SEC. 12. Sick or suspected parties may be subjected to examination, and in case they are houseless or homeless, or without a fixed residence, or tramps, they may be restricted in the selection of their place of abode and work.

SEC. 13. The administration may issue an order for the respective districts or parts thereof, that parties coming within a prescribed time from districts infected with cholera, spotted fever, yellow fever, plague, or smallpox, must report their arrival verbally or in writing to the local police authorities.

SEC. 14. Parties affected with or suspected of cholera, spotted fever, yellow fever, plague, smallpox, diphtheria, relapsing fever or scarlatina, may be isolated. This rule also holds good in cases where parties are suspected of infection.

The head of the household, where there are suspected or sick persons, is bound to make such arrangements that all those coming in contact with or attending to the suspected or affected persons are isolated from the rest.

If this isolation can not properly be affected, the government physician may order his transfer to a hospital or any other suitable place.

The transfer and isolation of parties suffering from typhus of the intestines or dysentery may be ordered when the conditions or the location of the rooms used are such as to create a fear of spreading the disease.

Houses in which there are patients suffering with cholera, spotted fever, yellow fever, plague, or smallpox may be marked or indicated on the outside. Intercourse with professional attendants may be regulated.

SEC. 15. The Government has the power for the time that the danger of the disease lasts (*a*) to order measures necessary to prevent the spreading of cholera, spotted fever, yellow fever, plague, smallpox, typhus of the intestines, in localities where they may appear, by regulating the production, treatment, keeping and sale of articles likely to disseminate these diseases, also to order a sanitary inspection for this purpose; (*b*) to subject all persons engaged in shipping, rafting, or other modes of transportation to a sanitary supervision, and to exclude from transport all sick and suspected persons, also such articles as may contain the germ of contagion; also to restrict the shipping and rafting to certain hours of the day; also to exclude all such articles from the freight traffic as indicated in *a*; also to limit or to prohibit the holding of marts, fairs, or other institutions likely to draw large crowds; (*c*) to prohibit the export of articles named in *a* from such localities where cholera, spotted fever, plague, or smallpox exists.

SEC. 16. Young people from houses where a contagious disease (sec. 1) exists may be temporarily kept from school. For other protective measures for schools the existing laws are applicable.

SEC. 17. In places where cholera, spotted fever, plague, smallpox, typhus of the intestines, or dysentery exists, or is threatened, also their environs, the use of water from wells, ponds, lakes, ditches, and hydrants may be prohibited, and the use of public bathing grounds or washing institutions may be restricted and prohibited.

SEC. 18. The evacuation of rooms and houses in which cases of cholera, spotted fever, yellow fever, smallpox, typhus of the intestines, relapsing fever, and dysentery have occurred may be ordered whenever, in the opinion of the Government physician, it is necessary, and when the occupants are otherwise provided for suitably and free of cost.

SEC. 19. All articles and rooms which have been exposed to infection must be disinfected. Luggage and merchandise may be disinfected when spotted fever, plague, smallpox, and other diseases are justly suspected as being infected.

If disinfection can not be had, or if it is too expensive, the articles may be destroyed.

SEC. 20. Special means of protection may be ordered for the preservation, the coffining, the transportation, and the burial of the bodies of persons having died of cholera, spotted fever, yellow fever, plague, smallpox, diphtheria, or scarlatina.

SEC. 21. Medical treatment may be ordered to prevent spreading of contagious diseases of the eyes. The patient in that case is entitled to medical treatment free of cost.

SEC. 22. The Bundesrath has the power to enact special laws to serve as protective measures, as given in sections 12 to 21, particularly in regard to disinfection.

SEC. 23. The proper authorities may compel the communities to make such arrangements as will be necessary to combat contagious diseases (sec 1)

SEC. 24. To prevent the introduction of contagious diseases from foreign countries, (*a*) the import and transport of merchandise; (*b*) the admission of seagoing and such vessels as are used in the passenger and freight trade; (*c*) the admissior and transportation of parties coming from infected countries, may be restricted or even be prohibited.

The Bundesrath has the power to issue additional regulations in reference to this. As far as they relate to the sanitary inspection of vessels they may include the shipping traffic between German ports.

SEC. 25. When a contagious disease (sec. 1) has broken out in a foreign country, or in a coast district of the Empire, the Chancellor of the Empire or, for the nearest threatened state of the German Federation, the Government of such state, in conjunction with the Chancellor, shall determine when and to what extent the regulations of section 24 shall be enforced.

SEC. 26. The Bundesrath has the power to pass laws requiring the issuance of health certificates for vessels sailing from German ports.

SEC. 27. If a contagious disease (sec. 1) breaks out in an adjoining country the proper authorities may close all marts, fairs, and other institutions likely to draw large crowds, within the threatened district, or temporarily restrict the same.

Indemnity.

SEC. 28. Articles damaged or destroyed by disinfection ordered by the authorities will be paid for, excepting such as come under section 32 and section 33.

SEC. 29. Provisions as to (*a*) who has to pay and from what fund; (*b*) within what time the claim must be made; (*c*) how the appraisement is to be made, are made under the existing laws. If there are no laws to cover such cases, reimbursement will be made by the counties or districts in conformity with the decision of the administration (Government).

SEC. 30. Compensation is allowed for the original value of the article and not for the value as represented after disinfection. If the article is only damaged or only partly destroyed the value of what remains of the article will be deducted from the original.

SEC. 31. Compensation is paid to him in whose keeping the article was when disinfected, if no other claimant appears. When this payment has been made all claims under section 28 are void.

SEC. 32. No compensation will be allowed under this law (*a*) for articles the property of the Empire, of a state of the Federation, or of communal corporations; (*b*) for articles exported or imported in contravention of section 15 (*c*) and section 24.

SEC. 33. No claim for compensation will be allowed (*a*) if the party know or ought to have known that the damaged or destroyed articles were already infected at the time they became his property; (*b*) if the party in whose keeping the damaged or destroyed articles were, caused them to be disinfected in violation of this law.

General directions.

SEC. 34. All arrangements *pro bono publico* for the supply of water for drinking or household purposes and the removal of decayed matter are under the supervision of a Government official.

The communities must see to the removal of all that is dangerous to public health; they may be compelled at any time to make such improvements as mentioned in the first part of this section, when they are necessary for protection against contagious diseases (sec. 1). The proceedings under which the communities may be compelled to make such arrangements are governed by the existing laws.

SEC. 35. Government physicians in the sense of this law are those appointed by the Government.

In the case of the Government physician being prevented, or for other reasons, another physician may be employed. The latter is authorized under this order to attend to all such duties as are conferred under this law upon the Government physician.

SEC. 36. The Government has charge of all measures for protection and suppression. The duties of the courts and the levying of expenses are fixed by existing laws. The Government decides what is meant by "community," communal corporation, and "county."

SEC. 37. The states of the Federation are obliged to assist each other in the extirpation of diseases dangerous to public health.

SEC. 38. The execution of the protective measures are in charge of the military or naval authorities, when the parties concerned (*a*) belong to the army or navy; (*b*) are quartered in Government buildings or vessels, or such chartered by the Government; (*c*) are military persons or troops of the army or navy on the march or transport, also their equipment; (*d*) also all grounds and appliances used by the army or navy.

These laws do not interfere with the movement of troops or control meetings.

All military and police authorities must at once notify each other of any outbreak of a contagious disease (section 1), or if such is suspected.

SEC. 39. The issuance of all protective measures relative to railroad, mail, and telegraph traffic, coming under this law, devolves entirely upon the State or Imperial authorities. Restrictions of traffic and orders for disinfection can not be issued by the police in regard to employés and laborers of railroad, post, and telegraph departments when on duty or when detailed for special duty at some other place than where domiciled.

SEC. 40. It is the duty of the chancellor of the Empire to see that these laws and regulations are properly observed. If measures are necessary for combating cholera, spotted fever, yellow fever, plague, or smallpox, threatening several states of the Federation, the chancellor, or a commissioner appointed by him, is authorized to issue the necessary orders for uniform arrangements of the several authorities, and in cases of emergency to send instructions at once to the state authorities.

SEC. 41. If an outbreak of cholera, spotted fever, yellow fever, plague, or smallpox has been established at a place, the Imperial board of health must at once be notified. The federal council is authorized to decide whether or not the Imperial board of health shall be notified of the cases of sickness or death.

SEC. 42. An Imperial council is formed in connection with the Imperial board of health. The transaction of business is fixed by the chancellor; the members are elected by the federal council.

It is the duty of this Imperial council to assist the board of health in the fulfillment of its task; it shall advise the authorities, when requested; it may communicate directly with the authorities for any information desired, or send a deputy, to make his investigations with the assistance of the respective authorities.

Punishment and fines.

SEC. 43. Whoever knowingly breaks the export interdict, issued in conformity with section 15 (*c*); whoever knowingly, and before they have been disinfected, appropriates for his own use or the use of others any wearing apparel, linen, bedding, or other articles worn by parties affected with a contagious disease, or which have been used in the taking care of such sufferer, for which disinfection was ordered; whoever knowingly uses or permits others to use any vehicles or other commodities used in the transportation of the sick or dead, before they have been disinfected, shall be imprisoned for two years.

If there are any ameliorating circumstances, a fine of 500 marks may be adjudicated.

If a third party is affected with the disease in consequence of such action as above indicated, he shall be punished by imprisonment from three months to three years.

SEC. 44. The following parties may be fined from 10 to 50 marks, or incarcerated for not less than one week: (*a*) Who neglect to give the information required by sections from 2 to 4, or who delay for more than twenty-four hours to report such matter after they have been informed of it; this criminal proceeding is nullified if the information is given in time by someone, although he may not be the one obliged to give it; (*b*) who refuses admittance to the Government physician to the patient or the body, for making the necessary examinations, as required in section 7; (*c*) who refuses information or makes false statements to the Government physician, as to section 7, second section; (*d*) who acts contrary to section 13.

SEC. 45. The following are subject to a fine not exceeding 150 marks or to incarceration, if under the existing laws no severer punishment is provided for: (*a*) Who contravenes against the preliminary rules issued by the Government physician or the local authorities in section 10; (*b*) who contravenes against the police regulations issued in sections 12, 14, 15, 17, 19 to 22, and 27; (*c*) who contravenes against the provisions of section 25 and section 26.

In commenting upon the foregoing law the official organ of the Government says: "The agency and the action of the authorities in preventing and combating dangerous diseases is justified not only from a sanitary standpoint, but also for important economical reasons. By placing the responsibility for an effective resistance on the shoulders of the Imperial administration, the Imperial diet did so with a full understanding of the great losses which might be inflicted on the whole population. The losses in the German Empire incurred year after year through sickness and disease may be approximately calculated. The number of people insured in sick-relief associations in the year 1890 was 6,342,828, nearly 14 per cent of the population. Relief was paid in that year for 39,176,689 days, as follows:

	Marks.
Medical attendance	16,783,453
Medicine	14,187,242
Relief money	39,883,695
Care at hospitals	8,881,509
Pay to others for assistance	347,889
Total	80,093,797

"Considering that the loss in wages is not accounted for, which is hardly less than the amount paid in relief; that the figures represent only part of the total population; that they refer mostly to parties of an age not usually subject to sickness and that no contagious diseases had occurred during that year, the total amount lost by sickness can only be guessed at.

"Looking at these formidable losses, it is easily understood that a large part thereof might be avoided by the improvement in sanitary arrangements; and there is no doubt that they may be considerably decreased by a greater attention to hygienic laws, and that the spreading of the disease may be diminished and the losses by it greatly reduced.

"In the present advanced state of medical science, cholera, smallpox, and typhus are counted among the avoidable diseases; and scarlatina, diphtheria, and puerperal fever may be restricted by the enforcement of proper hygienic arrangements.

"The constant decrease in the mortality from typhus in the larger German cities has been accomplished by a strict observance of sanitary measures, and the almost entire extinction of smallpox, formerly so prevalent, is due to the protective measures instituted by law.

"Of the average loss during the years from 1885 to 1891 of a population of about 10,500,000 of the larger cities of the Empire, 11,290 died of diphtheria and croup, 2,552 of scarlatina, and 2,342 of abdominal typhus (typhoid fever). In the smaller cities and among the country population the loss was comparatively larger.

"The cholera epidemic in 1892 demonstrated forcibly the necessity of a uniform law for the prevention and extirpation of contagious diseases throughout the Empire. All the Imperial Diet could do at that time was to request the opinion of experts and to recommend to the several States the adoption of such measures as proposed by them. It was thus that arrangements for a successful fight against the disease could be made at those places where cholera appeared. But all this was insufficient for the passenger and freight traffic. It was very fortunate that the disease did not spread more in Germany than it did. The lack of arrangements and the absence of suitable laws would have caused incalculable losses.

"This made clear the necessity of drafting laws for the prevention and extirpation of contagious diseases, and the preparation of them was at once entered into. The imperial board of health, in conjunction with the best known experts of the German Empire, belonging to said board as extraordinary (expert) members, discussed the scientific, technical questions to be adopted; and the foregoing laws are the result of their deliberations.

"It is not intended that this law should detail all the measures necessary for the protection against all contagious diseases. On the contrary, it only gives the leading principles, while the details and frequently the construction of the law must be left to the local authorities and the attending physician.

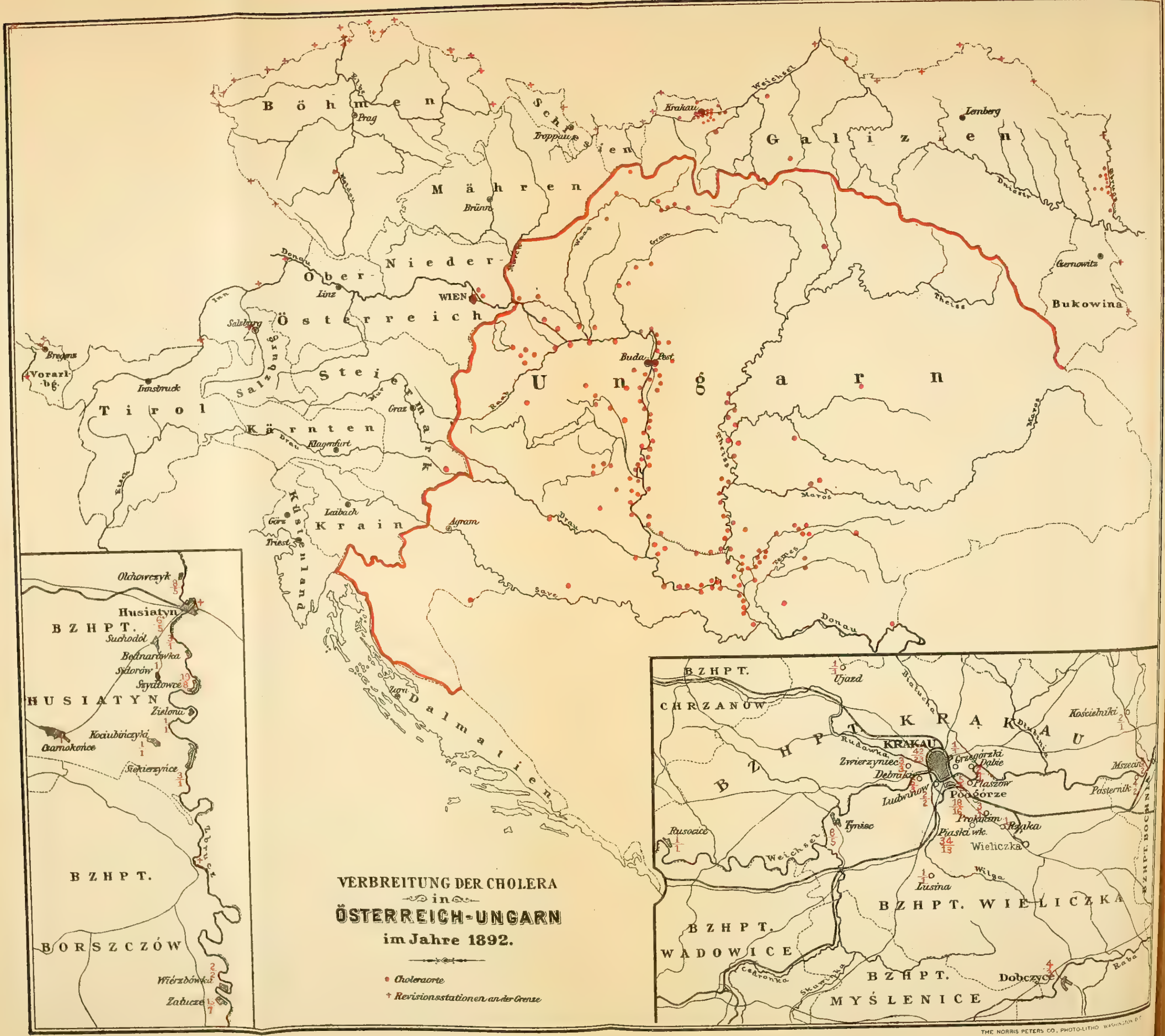
"Science is progressing. The laws, therefore, must be somewhat flexible and made so that the local authorities and the medical supervisors are justified and authorized to use their own judgment and give the law their own interpretation to a certain extent."

February 13, left for Vienna. On the 14th called on Consul-General Julius Goldsmith, who informed us that no rags had been sent from Austria to the United States since cholera made its first appearance. When cholera became prevalent in Russia, and before it entered the Austrian dominions, the consul-general wrote to all the U. S. consuls in his district and suggested to them the propriety of requesting the several rag exporters to stop sending rags to the United States. He said that he took this step as a precautionary measure before instructions were received from the Treasury Department to stop the importation. In conformity with these suggestions the exporters stopped shipping from Austrian ports, and no rags have been sent through them to the United States since that time. He said that rags were sent to England, but he had no knowledge of the quantity or when they were sent. When any other goods liable to carry contagion are sent from Austria, Consul-General Goldsmith requires the shipper to first procure a certificate from the sanitary bureau, which is a Government institution, that no cholera or other contagious or infectious diseases exist in the district from which the goods came. When this is furnished the invoice is authenticated. A great many skins used in making gloves are sent from here to the United States, and the consul requires that each consignment must be certified as stated. Consul Goldsmith informed us that the Austrian officials were very particular about all sanitary regulations, dreading a recurrence of cholera with the advent of warm weather, and that the Government had issued a request to the several European nations asking them to send delegates to Dresden in March, 1893, to formulate international methods for the prevention of the spread of cholera.

During the recent epidemic the Austrian Government caused all articles of baggage belonging to any person crossing the frontier to be disinfected by steam. This process was done so effectually that large quantities of valuable material—silks, satins, etc.—were ruined by the improper use of the steam, and constant complaints were made to all of the consular offices in the city by travelers coming from the countries which they represented because of losses which the travelers sustained by the indiscriminate steaming.

CHOLERA IN AUSTRIA-HUNGARY.

The following interesting statement was prepared by the governmental sanitary authorities, and summarizes the facts concerning the introduction and spread of cholera within the Austrian dominion, and the very efficient methods taken to suppress it:



VERBREITUNG DER CHOLERA
in
ÖSTERREICH-UNGARN
im Jahre 1892.

- ● Choleraorte
- + Revisionsstationen an der Grenze

THE NORRIS PETERS CO., PHOTO-LITHO, WASHINGTON D.C.

The cholera in the kingdoms and countries represented in the "Reichsrath" (Imperial Diet) in 1892, with a map annexed showing the spreading of cholera in Austria-Hungary.

When, in June, 1891, the news came of the appearance of cholera in Cashmere, Afghanistan, and Persia, on its way from Hurdwar, in India, and that it had reached the large industrial city of Baku, situated on the banks of the Caspian Sea, causing great losses among the population, the attention of the imperial board of health of the department of the interior, which was thoroughly informed of the route of the cholera by the department of state, was called to the danger of the plague pushing its way into European Russia and threatening their own borders.

Carefully watching the further spreading of the plague, also its astonishing leaps, the universal attention of the several governments was at once aroused, and an organized resistance was commenced against the possible invasion of the plague by means of universal activity in the completion of much-needed draining and the introduction of sanitary measures for the supervision of the traffic with the infected countries, so that this organization could be put into operation at any time upon telegraphic instructions.

These precautionary measures at once showed good results. The cholera was very soon introduced by fugitives into the southern part of Russia by way of Batoum. It also spread in the direction of Astrakhan, and from thence along the River Volga to the north and west, while at the same time in and around Paris a suspicious epidemic of "cholerine" began. Cholera very suddenly appeared at Hamburg, and caused an epidemic surpassing in its intensity all former epidemics in that city. When fugitives from cholera fled from Hamburg they scattered in all directions and spread the disease in the German Empire. Then, in accordance with former experiences, it was to be expected that the plague would sooner or later invade the kingdoms and countries represented in the Imperial Diet. As a fact, it firmly established itself in the beginning of September at Podgórze and Krakau, near the Russian frontier, but it was kept there isolated in a small area.

The danger was greatly increased when, in the beginning of October, official information was received from Budapest confirming the presence of undoubted cases of cholera, and soon after the existence of the plague was reported from communities outside of Budapest and along the River Donau and its tributaries, so that it might easily be introduced by means of the existing traffic on the River Donau as well as on land.

The active commerce with the German Empire led to further apprehension. Cases occurred in rapid succession in several districts, from whose infected ports many laborers and emigrants returned to their native homes in Austria and Hungary.

Threatened on three sides by this cholera invasion, the Austrian board of health was sorely tried as to whether or not the unfinished organization of the local sanitary service and that of the Government had been so consolidated as to be able to discover the first cases of the plague and to confine and extirpate them.

This statement is intended to give information of the spreading of the plague in the kingdoms and the countries represented in the Imperial Diet, and also to give a résumé of the measures adopted to stop the invasion, and to restrict the further spreading from the infected places.

ROUTE AND EXTENSION OF THE CHOLERA.

The Cholera in Galicia.

The first case occurred in the city of Podgórze, Galicia. Other cases were soon added to this in the district and city of Krakau. At the same time single cases occurred in other districts of Galicia, in Bohemia, Lower Austria, and Styria.

The epidemic appeared to be extinct in the month of November, when the news came of cases of cholera in the district of Husiatyn, on the Russian frontier of Galicia. The disease spread to several communities in this district and entered the adjoining district of Borszczow, and was not extirpated at the end of the year.

Cholera, therefore, existed during the year of 1892 in two districts, one in West Galicia, confined to Krakau and environs, and the other in the extreme eastern part of Galicia, along the Russian frontier. Only individual cases occurred in the other localities, but the disease did not appear as an epidemic.

One case of cholera (a woman 30 years of age) occurred in Podgórze on September 8; others on September 9, 11, 12, and 13. The first case in Krakau, situated on the other side of the river, appeared September 11.

The first cases were not recognized as cholera. The examination of the sufferers and the autopsies did not establish the true character of the disease, and only the bacteriological investigations by Dr. Krokiewicz, in the laboratory of the board of health in Lemberg, of the material sent by the physician of the district of Wieliczka, established the presence of Koch's comma bacillus.

In consequence of the contradictory results of the investigations in Krakau and Lemberg, and for the purpose of securing a correct diagnosis, the Department of the Interior sent a prominent expert, Dr. A. Weichselbaum, professor of bacteriology at the University of Vienna, to Krakau, the expert professors at the University of Krakau being absent on leave. Dr. Weichselbaum confirmed the findings of Dr. Krokiewicz, and was able to establish the existence of cholera by the excrements of patients and in autopsies.

The epidemic was confined to Podgórze and Krakau for three weeks.

Independent of these there appeared, on September 12, the first case of cholora in the county of Wolowiec, district of Gorlice, three more cases soon following. The first cases in the country around Krakau-Podgórze appeared in the beginning of October, then in rapid succession and in greater number in the districts of Krakau and Wieliczka.

The first cases of cholera in the city of Husiatyn, on the Russian frontier and on the river Żbrucz, appeared November 14. It spread to the adjoining communities in the same district, and later on to those of the district of Borsczow, on the southern border of the first named.

The accompanying map shows the situation of the afflicted communities in the country around Krakau and on the river Zbrucz, and on the map is added the number of cases in the several communities of the eastern and western range of the epidemic in such a way that the upper figures indicate the number of cases of sickness and the lower figures the number of deaths.

The total number of cases in Galicia for the year 1892 reported to the authorities is 207, of which 119 were fatal.

It is not known how the disease was introduced into Podgórze, and it could not be ascertained after careful investigations. The first case was unexpected, but it appears that slight attacks had already occurred in the Lazarus Hospital before the first case occurred in Podgórze.

How the cholera was introduced into the communities around Krakau could not be explained, but the close proximity to and the constant traffic with Krakau leaves no doubt that it came from there. The majority of the infected communities are situated very near the cities and on the river Weichsel.

It is very likely that the before-mentioned woman introduced the disease. She had returned from America, arrived in Hamburg on September 3, and had there been under medical observation for five days, had left Hamburg on the 8th, arrived at her home on the 11th, and was taken sick on the 12th with symptoms of cholera.

It is remarkable that the parties first afflicted were mostly employed in handling produce—grocers, restaurant keepers, and cooks. Later cases occurred among servants, day laborers, and mechanics. In one community a great number of cases occurred among butchers.

It is supposed, but not established, that the cholera germ had been introduced from the adjoining infected Russian districts, and that the traffic with these Russian districts, made easy by the freezing of the river Zbrucz, caused the introduction.

Cholera outside of Galicia.

The outbreak of cholera in Budapest, and quick spreading outside the capital, placed the western half of the Empire in great danger. Quite a number of cases of dysentery accompanied by vomiting had occurred during the summer in Budapest, but the bacteriological investigation established the existence of Asiatic cholera only in the beginning of October. Two weeks after the outbreak of cholera in Budapest had been established, a case occurred in Bohemia, introduced by a laborer who had come from Budapest; but a further spreading of the disease was prevented by the strict measures immediately taken.

It was at the same time introduced in Styria by a party returning from a trading expedition in Hungary, but he recovered; his daughter was taken sick October 15 under similar symptoms and died October 18. A few days later two of his neighbors died. In one of the latter cases the disease was pronounced Asiatic cholera, but it did not spread.

The first case of cholera in Vienna occurred October 21, 1893, and the autopsy and bacteriological observations established Koch's comma bacillus. Another case occurred October 23 and ended fatally. The third case was that of a laborer employed in unloading a vessel reported to be from an infected district, but which was engaged in carrying rags. The infection may not have come from the rags, but through the probably infected vessel. It occurred October 23; the cholera bacillus was established in the excrements. The fourth (last) case in Vienna was a sailor whose body was found in the hold of the vessel on the night of the 8th of November; in this case also Asiatic cholera was bacteriologically established.

No actual cholera cases besides these are known outside of Galicia, but a number of cases suspected to be cholera occurred in several districts, all of which, after careful bacteriological investigations made by experts, were pronounced not to be cholera.

The suspicion was frequently based upon symptoms only slightly resembling those of cholera; which shows how careful and conscientiously all cases were reported. The total number of cholera cases in the western half of the Empire in the year 1892 amounted to 214, with 125 deaths, as follows:

	Cases.	Deaths.
Galicia	207	119
Lower Austria	4	3
Styria	2	2
Bohemia	1	1

MEASURES AGAINST CHOLERA.

The measures against the introduction of cholera are contained in the "Cholera instruction," issued by the Department of the Interior under date of August 5, 1886. The principles and rules contained therein served as a guide for the sanitary commission. The progress in medical science and bacteriology, which was never lost sight of in combating and extirpating the disease, made it necessary that some amendments should be made to these instructions; and they called attention to the carriers of this infectious germ—that is, to patients and their wearing apparel, to commerce and traffic—as the means of spreading the disease. The new measures adopted may be divided as follows:

1. Measures against the introduction of cholera on the frontier.

The dangerous outbreak of cholera in Russia, where typhoid fever and other epidemics had existed for some time, naturally called the attention of the authorities to the danger of its introduction from there.

At the session of the sanitary council of July 2, 1891, measures were considered to check further progress of cholera from Baku and Tiflis (Russia), and regulations for that purpose were adopted.

By rescript of the department of the interior of July 8, 1891, the authorities were notified of the existing great danger, and the districts of Lemberg and Czernowitz instructed to take all protective measures for a sanitary inspection of all travelers coming from Russia, and their baggage; also all baggage checked through to some part of the interior.

The cases occurring near Paris caused investigations to be made for the observation of the same measures on the western frontier.

But when subsequently cholera broke out in Hamburg, and when the epidemic was officially reported in the Netherlands, in Belgium, and France, then a general observance of the sanitary and protective measures were ordered. This was necessary, because numerous fugitives from infected parts of the German Empire went to Switzerland, and to the watering places in Bohemia, threatening the introduction of the disease from all sides.

The measures taken to prevent the introduction of the disease consisted in the examination and, if necessary, the control of the new arrivals; the inspection of their clothes, linen, and other articles believed to be transmitters of the contagium; the supervision of travelers during their stay in the interior, for a time equal to the incubation period of the cholera. The import and transport of merchandise, as a possible carrier of contagium, was prohibited.

The sanitary examination of the traveling public was as follows: Upon the arrival of the train from a foreign country, the physician appointed for the purpose first called for the report of the conductor as to whether any cases of sickness had occurred on the road, then to examine the travelers and inspect the general state of health of all, to decide whether the suspects should continue on their journey or not. The local authorities had to provide accommodations necessary for the retention of such suspects.

The sanitary inspection of baggage was made at the same time and consisted of examining the soiled linen and luggage. If such was found, it was disinfected or destroyed, with the consent of the owner. Disinfected articles of linen were washed and subsequently returned to the owner. All the proceedings were reported to the authorities.

In observing these measures an interruption in the direct train connection naturally took place, and the through transport of all trains from a cholera-infected district was suspended.

The appointment of medical examiners was provided for in 1885 and 1886, when cholera existed in Italy and France, and the employment of physicians was so amended that as far as possible only physicians of pathological training were appointed.

The inspection of all luggage checked through to an inland custom-house was made in the same way, and the local authorities furnished the names of the physicians appointed for that duty to the custom-house inspector.

The freight traffic from the cholera-infected countries into Austria-Hungary was to a certain extent also restricted, inasmuch as goods and articles were excluded from importation, when suspected as carriers of the infection germ.

The importation of the following material was prohibited: Rags, old clothes, old rope, worn linen and bed linen, fruit, vegetables, caviar, fish, hides, and other animal products; first from Russia, then Hamburg and Altona; later on from the German Empire, France, Belgium, and Roumania.

The fear of the general public extended also to letters, and it was necessary to issue special admonition to prevent these articles from being included in the above measures.

Inasmuch as all this tended to restrict the commerce with the frontier districts and to cause great losses and suffering, the regulations as to these districts were to some extent modified.

This inspection of luggage very soon caused the traveling public to leave all soiled articles behind and they only carried clean articles.

Disinfection was carried on in a specially constructed apparatus with steam, or with a carbolic acid solution, in accordance with the instructions for disinfection issued August 16, 1887. Nearly all the inspection stations on the frontier were supplied with steam disinfecting apparatus.

The sanitary inspection stations stretched along the whole frontier and some idea of the work done may be gathered when it is stated that more than 218,000 passengers by land and water were examined, and over 150,000 pieces of baggage.

The number of suspected cases was proportionately small. The undoubted fact that the disease generally occurred in the river districts led to the strictest and most careful inspection of the waterways, and special regulations in regard thereto were issued.

The measures in regard to ocean traffic published by the Marine Sanitary Service consisted of an observation period of several days' duration, or, if deemed sufficient, only a medical inspection of people and articles from infected ports or countries.

2. *Measures adopted for the interior.*

A sanitary examination of parties coming from other countries afforded only a limited safety; it was therefore ordered that they should be kept under medical supervision for five days. Parties coming from infected districts had to travel in separate cars and were under constant surveillance of the road officers, and when taken sick on the road they were sent to the barracks, a number of which had been established all along the line. No cholera patient could remain in the depot; he was sent at once to the nearest barrack. Even the railroad tracks were gone over and inspected, and all excrement from trains, wherever found, covered with disinfectants.

The trains from Budapest to Vienna carried physicians to minister at once to those taken sick on the road.

When cholera broke out in Hungary it was treated like a foreign country. Its frontiers were carefully guarded and commerce and traffic were subject to the strictest inspection.

Besides all these measures, intended to prevent the introduction of the disease and to discover the first case as soon as it occurred, the authorities extended sewerage and drainage and caused the removal of unsanitary evils in all districts where the conditions were in a state favorable to the development of the disease. All this was for the purpose of killing the epidemic in its first stage, if possible, and to prevent its spreading.

Very important, far-reaching, and efficient was the appointment by the Government of the most experienced physicians in the districts as inspectors and supervisors; sometimes, even, they were sent beyond the border into the adjoining infected countries for the purpose of collecting authentic information as to the stage of the disease and the measures adopted for its extirpation. In their own districts they ordered or superintended all measures for the prevention and extirpation of the cholera. In this way they came frequently in contact with the police, communal, and city authorities. They caused many improvements to be made. Through their efforts a more uniform action in the several districts was taken, sometimes even a friendly rivalry in creating sanitary improvements, all of which would not have happened in the usual course of things.

In consequence of all these arrangements and upon the instigation of the sanitary authorities an active movement took place in all the districts for the removal of all unsanitary nuisances, and the state, city, and communal authorities appropriated money liberally for that purpose. In the first place, public cleanliness, the removal of offal, rotten and decayed matter, cleaning of sewers or waterways, of springs and wells, the furnishing of pure drinking water, the building of drains, the removal of all nuisances in public places, hotels, and barracks was insisted upon. Orders were given and regulations issued for the building of sewers in the cities, and the amount of work done by the local authorities is remarkable; all of which will undoubtedly have a beneficial effect in preventing outbreaks for years to come.

Special attention was paid to the quality of and the traffic in eatables and drinkables. Any shortcoming was at once reported and corrected.

The several disinfectants were examined and the public was informed of the results, and the best and cheapest recommended. The number of steam disinfection apparatus with all improvements was increased. The local authorities in lower Austria alone had 196.

Money was liberally appropriated to assist the poorer communities in purchasing the needed disinfectants. A pamphlet was printed and widely distributed explaining the use of disinfectants; another one explaining the nature, the cause, and the appearance of the cholera, and the means of prevention, and giving local and individual protective measures, etc. This served two purposes: One to lessen the fear, and the other to spread a correct understanding of the cholera plague.

The arrangements made for notifying the authorities of the appearance of cholera in the interior of the country consisted in immediate information of the first case and its isolation. Notification by telegraph was free of charge. Recognized experts in bacteriology were everywhere appointed to examine all dubious cases; and where no expert could be had instructions and explanations were sent to the appointed physicians as to how they were to prepare and send cover-glass preparations and cultures for microscopic examination. These bacteriological investigations for the determination of the character of the disease have been of great help in many cases.

The isolation of affected parties, especially in the beginning, is frequently very difficult in communities having no hospitals. It was necessary, therefore, in such localities to find homes suited to the purposes and at the same time provide for the proper nursing. In such localities temporary hospitals were provided.

A call was made for volunteer physicians, and a list of these was prepared by the department of the interior.

The medical scientists of the Vienna University were requested to prepare a pamphlet explaining the diagnoses and the therapeutics of cholera in a concise, clear, and easily comprehensible manner, which was done by Drs. Kahler and Nothnagel, which was printed and sent to all physicians and druggists in the Empire of Austria.

Honorable mention is made of the valuable services rendered by the "Voluntary Association" and the "Austrian Red Cross Association."

All the administrative departments united in disseminating useful knowledge of the disease, in preventing its introduction, in removing its causes, and in the endeavor to extirpate it.

3. Measures at the outbreak of cholera.

The same principles which govern the protective measures against the introduction of the disease from a foreign country were made applicable to an outbreak in the interior.

The patients were immediately isolated, or placed in cholera hospitals. Upon the occurrence of the first case all people in the community, if deemed necessary, also those of the adjoining communities, were carefully examined, and all affected and suspected cases at once isolated. A physician was appointed by the Government and stationed during the time of the epidemic at places where no resident physician was located. The houses in which the cases occurred were thoroughly examined, the filth, offal, and dirt removed, the bedding disinfected, the sewerage inspected, suspected wells closed, etc.

The traffic and commerce with infected places was restricted to the utmost; the gathering of large crowds forbidden, the sale of fresh meats, butter, milk, cheese, vegetables, and fruit on the streets, and the collection of rags strictly prohibited.

Parties from infected districts desirous to go to other places were subject to medical examination. When the plague had spread to some extent the railroad traffic was restricted; all people carefully examined, the suspected or sick rejected, the baggage examined, and if necessary, disinfected; the traveling public from infected districts forwarded in separate cars; those from Krakau and Podgórze were subject to a five days' quarantine.

Special attention was paid to drinking water, and it was strongly recommended to boil it before using. In some districts tea was sold to the population at almost nominal prices.

Strict orders were issued and carried out for the disinfection of vessels.

The description contained in the first part of this pamphlet of the course and the spreading of the disease in the Austrian Empire, the attempt in Krakau and its environs to keep it confined, and the quick extirpation of the infection germ in many localities are the best proofs of the value of protective measures. All authorities combine and unite in the opinion that the dejections of cholera patients are the main cause of the infection, and that a proper and perfect drainage and sewerage and complete disinfection are absolutely necessary for the extirpation of the germ. This can be done only by uniform action throughout the country.

The devotion of all those connected with the supervision and inspection, especially the corps of physicians, can not be too highly praised.

The accompanying map indicates the course of the cholera along the rivers in Austria-Hungary, especially the Donau (Danube) and the Theiss.

The red dots represent cholera-infected places; the red crosses, the stations in the boundary line where people and commodities were examined.

One small map represents the boundary line along the river Zbrucz, which divides Galicia from Russian territory. The other, Krakau and environs.

The upper figures represent the number of cases of cholera at each place; the lower figures, the number of deaths.

In order to make the connection with the steamship which was to sail from Genoa for the Mediterranean ports that we had been directed to visit, we left Vienna on February 16 and went directly to Genoa, arriving there after midnight of the 17th, and sailed from Genoa on the steamship *Fürst Bismarck* on the 18th.

February 24 we reached Alexandria, Egypt, and called on U. S. Consul S. C. Ewing, who informed us that rags were being shipped quite extensively to the United States from there, and that they had not been disinfected since the last epidemic of cholera until a few weeks ago, when directions came from the consul-general at Cairo that all rags must be disinfected, and that they were now making an effort to carry out the requirements of Treasury Circular No. 143. The consul said that he had not visited the establishments, nor had he personally inspected the methods of disinfection and knew nothing about the details; that Mr. Chassaud, who has been connected with the consulate at Cairo for some years, had been especially detailed to inspect the methods of disinfection in Alexandria and attended to the business. We visited Mr. Chassaud, who at once placed himself at our disposal. Mr. Chassaud is of English parentage, but was born in Egypt;

has traveled extensively in the country, and is thoroughly acquainted with the people. In conversation with us he stated that he thought it strange that the United States did not require the disinfection of rags coming from Egypt at all times, because smallpox is never absent from that country. The Arabs will not be vaccinated and are therefore especially liable to the disease. Their religion teaches them a species of fatalism and they rarely employ a physician. When a member of an Arab family dies of smallpox they sell such articles as they do not wish to retain (without washing or cleansing of any kind) to the itinerant rag gatherer who is constantly prowling about the country. These rags are exceptionally filthy because of the method of life among the Arabs, and they have been exported until within a few days past without disinfection. He said, furthermore, that the general statistics published by the Egyptian Government concerning smallpox and other diseases are unreliable. Physicians employed by the Government live in each of the larger villages, but being themselves Arabs they follow the customs peculiar to their own people. As a rule, they pay no particular attention to sanitary matters, and more likely than not pay no attention to such calls as the Arab inhabitants make, for should they suggest a certain method of treatment which did not conform to what the friends thought the patient ought to have they would pay no attention to it. Mr. Chassaud said that the Arabs are always extremely filthy in their personal habits; that they live in houses made of mud and dung, which they very rarely cleanse, and they become in a short time horribly dirty—a statement we had abundant opportunity to verify during our subsequent visits to the several places.

Accompanied by Mr. Chassaud we visited the rag warehouse of Butterworth & Smalley. Their disinfecting chamber was built about three months ago and has a capacity of 5,500 cubic feet. In it there are four tiers of racks upon which rags are spread 8 inches deep. They disinfect from 24 to 25 bales a day. They employ 50 sorters, and their superintendent informed us that he never knew any of them to be affected with any contagious disease.

The rags all come from Alexandria and places in the interior. The inspection is under the entire control of Mr. Chassaud, who checks irregularities by keeping the number of the bales disinfected under his supervision and comparing them with the invoices issued.

He informed us that the superintendent of the warehouses endeavored in every way to defeat him in his work of inspection, but that his constant presence during the process enabled him to assure himself that the work was properly done. We also visited Behrends' establishment. Here the disinfecting room is a wooden shed of temporary character and poorly constructed. It has a capacity of 400 square feet, and is divided into six compartments, each having a door through which a rail track is laid. The rags are spread on racks mounted on wheels, so that the rack may be pulled out of its compartment loaded with rags and rolled back to its position. They disinfect about 900 bales per week, employing 60 to 70 sorters. The rags are all shipped to the United States. We found the racks too close together, and suggested that they be separated; also that the compartment doors should have a padlock on each and the keys retained by the inspector during the disinfecting process. The proprietor commenced making these changes before we left the city. At this place the rag-dusting machine is used, which pulls apart the dried and matted rags and beats out quantities of dust with which the rags in this country are covered. The rags thus picked apart can be more thoroughly disinfected because they lie more loosely upon the racks.

The next place visited was the warehouse of Mr. Menschausen, the largest establishment in Alexandria. In it are two disinfecting rooms, each having about 5,000 cubic feet capacity. The racks are arranged without order, being constructed for the convenience of those who carry the rags into the room. The lower rack is close to the floor. On each the rags were piled from 3 to 4 feet deep. The same precautions are in use at this place as at the others in this city, all being under the inspection of Mr. Chassaud, who assured us that the changes we proposed in the methods of disinfection, so that it should conform with the requirements of Circular No. 143, should be made at once.

The fees for inspection are a charge upon the shippers, but do not go directly to the inspector, who is employed and paid by the U. S. consul.

February 25 we reached Cairo and called on Consul-General Little, who outlined to us the instructions he had given to his inspector in Alexandria, which in substance have been stated above. He said that rags are not now disinfected in Cairo, being sent to Alexandria for that purpose. He said that the rag exporters objected to the new regulations and were particularly averse to having an inspector watch them who had not been appointed and paid by themselves; but he had informed them that a strict compliance with the provisions of Circular No. 143 must be made, and that no abatement would be contemplated. Consul Little informed us that he had made particular inquiries of people who had lived for years in the country, relative to the sanitary conditions of the smaller towns, and there was but one opinion; that they were extremely filthy, and that smallpox was almost always present. We visited several Egyptian villages and the investigations we made confirm, in every particular, the statements made to us. The filth and squalor of these people is indescribable. The principal disease is smallpox; then come paludal fevers. Bowel complications are not common. Nearly all the native population are marked with smallpox. Inflammation of the eyes is frequent, and highly contagious. The proportion of the blind is unusually large, and corneal opacity very common. The huts of the Fellaheen are wretched in the extreme, and horribly dirty. They are built of sun-dried brick, are small, with no window, light and air being admitted at the open door, through which the family and the domestic animals enter, all being protected by the same roof, and in the same room. In the villages there are no sewers, cesspools, or other sanitary arrangements, the street in the immediate front of the house being made the depository for human dejecta, and no care is taken to prevent contaminating the water supplies which are frequently nothing more than pools or ponds, fed by the Nile at high water, and when the river recedes they become stagnant, receiving no further water supply until the next inundation. Not only are the streets in front of the village huts excessively filthy, but the same conditions exist in the narrow streets of "old" Cairo and in Alexandria.

In old Cairo the offal from the houses, workshops, and other places is swept into the streets, where it is trodden under foot and left to decay, until the condition of the streets becomes so bad that men are sent through with shovels to dig up the decaying mass, put it into baskets strapped upon donkeys, and carry it to the outskirts of the city, where it is dumped. There are no regular sanitary precautions in the older portions of Cairo or Alexandria. In the midst of the filthiest places the people draw water from shallow wells, around which there is no protection to prevent the inflow of surface drainage or the contents of adjacent cesspools, which are rarely if ever emptied. The waterworks which supply the city are imperfect. Close to the "intake" the natives bathe and wash their garments; human dejecta and the excrement of animals lie about contaminating the water; the whole length of the lower Nile is fouled by drainage and the carcasses of animals, and the inhabitants everywhere use the stream for washing clothes and bathing purposes. That the water is not properly filtered before being pumped through the city is shown by the large quantities of organic matter to be found in the water drawn from the pipes. Indeed, it would be difficult to conceive a place better calculated to foster disease than in the older parts of these cities, and undoubtedly the disregard of sanitary measures accounts for the frightful loss of life which depopulates Egypt whenever there is an epidemic of cholera or smallpox.

March 3 we returned to Alexandria to take the steamer which sailed that day. We saw Mr. Chassaud, the inspector, who informed us that the suggestions relative to changes in the disinfecting rooms had all been made, and that since our visit and conversation with the proprietors matters were progressing more satisfactorily. Before going on board the ship we met a gentleman whose name we withhold at his request. He is a member of a firm of rag exporters who have extensive establishments, and who are in close business relations with importers in the United States. He stated that rags are now going from all points into the United States with no pretense of disinfection; that when we began our investigations in Ghent our presence there was made known by telegraph to all the principal rag dealers on the Continent, and that at a subsequent meeting of those dealers, which was held in Brussels, they related the steps they had taken to deceive us as to the matter of disinfection; that Mr. Lansenburg (whose place we have heretofore described) stated that when he told us that his employés had gone away for the night, and that we had better return in the morning, he had immediately set all his force at work and put up the racks over night, so as to be ready for our inspection in the morning; that Mr. Van der Haege, also of Ghent, stated that he did the same thing after meeting us on the street in front of his building, and requested us to call later in the day; that he then prepared the room as best he could, and lit the sulphur with the expectation that we would not be able to get in, but that we came back a little too soon. At the same meeting it was stated that the houses at Arseele and Roulers had been prepared by telegrams for our arrival, but that after we had left the country matters went on as before. He also said that at this same meeting it was stated that some days after we left Ghent another official from the United States came there to investigate; that the U. S. consul sent for Dr. Pagaldine (the local inspector of disinfection) and the other inspector asked him if he saw the sulphur ignited at each of his visits. He replied that he did, whereupon the new inspector declared himself satisfied, and said that "everything was all right at Ghent;" that the rag exporters were delighted that the U. S. Treasury regulations, which we had insisted should be carried out at the time of our visit there, were disregarded, our report made to the Government set aside, and the suggestions we made overruled. This gentleman further stated that one of the English exporters had been to him, and told him that it was not necessary for him to disinfect rags, and advised him not to do so. Said our informant: "Business is business; it costs money to disinfect rags, and when the other people are not disinfecting why should we? So," said he, "we simply baled our rags without disinfection, stenciled them 'disinfected' and they were shipped and admitted to the United States without question." He said: "There are certain rag dealers in Boston and New York who seem to have more influence in Washington than your reports, which are certainly not being regarded." He then showed us a letter from New York, the signature to which we withhold, in which it was stated that "in spite of the reports made to the Department by the inspectors now abroad, rags will be admitted without hindrance into the United States until March 15. Please rush your rags along." And he continued: "I have come to Alexandria for the purpose of hastening forward the rags we now have on hand at this place." He then asked us if we had any suggestions to make. We replied that we could not commend the course he had taken, and would recommend him to continue disinfecting the rags. In response he said: "Gentlemen, so long as your consuls receive the fees for certificates of disinfection things will never be any better than they are now."

These significant statements, humiliating as they are, were confirmed, first, by letters from U. S. Consul W. E. Gardner, then at Rotterdam, already quoted (see pp. 95, 96); second, by statements made to us by U. S. Consul Roosevelt at Brussels, who informed us of the visit of the official to Ghent and the subsequent total disregard shown by the rag exporters there after his visit to the regulations requiring disinfection; and third, by the information furnished by the United States Bureau of Statistics, which show the enormous increase in the importation of rags into the United States beginning at that time. The importation for January, 1893, into New York, Boston, and Charlestown was 14,046,658 pounds; tor February, 8,522,431; for March, 20,431,478, and for April, 25,067,000 pounds.

These figures indicate that the advice from the New York importer to "rush your rags along" was responded to promptly.

At the request of Consul-General Little we visited the steamship *Guildhall*, lying in the harbor of Alexandria, preparing to carry the Egyptian exhibit to the World's Fair, in order to determine whether the vessel was in proper sanitary condition to make the voyage. We visited and carefully inspected every part of the ship, which was arranged to carry 26 first-cabin and 225 second-class passengers, besides camels, donkeys, and the other things necessary for the exhibit. Many changes had been made to accommodate the freight which she carried, and the ship was littered by the carpentry going on; but it was in good sanitary condition, and all requirements relating to the carrying of emigrants had been complied with; a certificate to that effect was sent to Consul Little.

March 4 we called upon U. S. Consul Selah Merrall at Jerusalem, who informed us that there was no disinfection of rags either there or at Jaffa; that the rags and bones sent from Jerusalem and Jaffa and the country roundabout went to England, none going direct to the United States.

At the date of our visit the city of Jerusalem was filled with Russian pilgrims who had come direct from Russia without quarantine of any kind for the purpose of worshiping at the shrines in the city. The consul informed us that they generally come in groups of from 100 to 200 at a time; they are from the poorer classes, and either camp out in wretchedly poor tents or else find lodging in the poorer quarters of the city. There are no sanitary precautions taken with reference to this pilgrimage and the authorities have no knowledge of the parts of Russia from which they come or what they bring with them; they remain from ten days to two weeks, sometimes walking to and from the seaports.

There were in Jerusalem at this time more than 50 lepers. These people are not admitted within the city gates, but are permitted to squat beside a wall running parallel to the city wall and close up to the Jaffa gate, where they beg for alms; they are wretchedly poor and filthy. There is a hospital for them when the disease has progressed so far that they are no longer able to beg.

Ophthalmitis is common, and there is a large proportion of blind. The cast-off clothing from these people is sent with the other rags to England without disinfection. Purulent ophthalmia is highly contagious and readily transmitted. It is difficult to contemplate with any degree of satisfaction the fact that the cast-off clothing of people afflicted with ophthalmia, leprosy, and smallpox comes almost directly to our own shores without disinfection. The native inhabitants of both Jaffa and Jerusalem, like their neighbors in Egypt, are very filthy; in many places about the city the filth is too shocking to be described; it is almost impossible to walk through the streets without becoming contaminated. In some of the villages about Jerusalem the filth is even worse than it is in Jerusalem, yet the rags from all this country find ready purchasers. We were informed by the consul that the American and English residents in Jerusalem are much alarmed at the present state of affairs; that during the past winter both Jew and Gentile residents held meetings to consider what was best to be done in view of the unsanitary conditions in the city. As a result they united in a petition to the Sultan of Turkey, in which they guaranteed to keep the streets of the city of Jerusalem clean and supplied with an abundance of pure water without any expense to the Turkish Government if the Sultan would permit them to do so, but their request was denied.

There is excellent opportunity to carry out the scheme proposed, for the pools which are said to have been built by King Solomon to supply the city with water are to-day almost as perfect as when they were completed, and the conduits which were built to convey the water to Jerusalem are almost intact; the springs which then supplied the pools with water still empty into them, and the water overflows and runs to waste away from the city.

Before offering to put this scheme into operation the whole subject was carefully investigated by English engineers who came for the purpose of making the examination. After a most careful inspection of what was necessary to be done they reported that it was not only practicable but expressed astonishment that it had not been done long ago, and that it would require but a comparatively small sum of money to perfect the water supply. The amount of money was subscribed before the Sultan was petitioned, but up to the time of our visit the permit had been withheld, and nothing can be done until this permission is obtained.

The supply of water for the use of the city is obtained from a few wells and from so-called cisterns into which the rainfall is conducted, which being located in depressions, surface water finds entrance, and with it, of course, the surface drainage. Should an epidemic of cholera occur here the unsanitary condition of Jerusalem would make the city a focus from which disease would radiate in all directions because of the large number of pilgrims from other countries who come to worship at the several shrines. Some strict quarantine regulations should be enforced to prevent the introduction or spread of disease which is liable to occur in this place. Without quarantine Jerusalem is a menace to the health of Europe.

March 10 we reached Smyrna, and called on U. S. Consul W. C. Emmett, who informed us that no rags had been shipped from there to the United States for six years; that he had declined to certify invoices on account of the prevalence of smallpox in and around the city. Smyrna, he said, is never free from smallpox, and no sanitary precautions are taken to prevent the disease spreading and the natives do not seem to care much about it. One reason for the continued presence of the disease is the fact that the Greeks, who form a large proportion of the population, refuse absolutely to be vaccinated. At this time there were fewer cases than formerly, but five months previous it was known that there were about 20 deaths a week; the total number is never known, for there are no sanitary statistics or death records. Large quantities of extremely filthy rags are shipped from here and Beirut; from here they go to England; from Beirut many go direct to the United States without disinfection.

Invoices for wools and rugs which are brought to Smyrna by caravans from the interior of the country must be accompanied by a certificate from a person who is known as the "local health officer" attached to the invoice. The consul said that these certificates had no value because the goods came from places in the interior where, under existing circumstances, it would be impossible for this officer to know anything about the sanitary condition of the places; that he certified only to the signature of the "health officer," and then the goods were forwarded without disinfection. He said that this was an unwise thing because "sheep rot" and "contagious catarrh" are very prevalent here among the animals. There is little doubt that some of the goods coming by caravan were from places where cholera and other contagious diseases exist. It is the custom for caravans coming from different directions in the far interior to join before arrival here, and no one but the drivers attached to each caravan know where they come from. No effort is made by the authorities of Smyrna to find out the starting point of the caravans; therefore nothing is known about their origin. It is in this manner, doubtless, that cholera is transmitted from place to place in that country.

From Smyrna we went to Constantinople, where we arrived March 13, and called upon Consul-General Hess, who told us that he had invoiced no rags to the United States for some years, considering them too filthy and dangerous to go there without disinfection; they go from here to England. Much merchandise from the Caucasus and adjacent territory passes through this port, and is either reshipped or goes direct to the United States.

As to the sanitary condition of the cities in this or adjacent countries from which goods come, all that our consul can do is to certify the genuineness of the signatures of the Turkish officials. These officials rely upon the reports made by their own officers located in the several countries sending goods to this place as to the existence or nonexistence of cholera or other epidemic diseases. The Ottoman officials certify to the U. S. consul the correctness of the reports they receive, and the U. S. consul certifies the genuineness of the signatures of the Turkish officials here, and to the further fact that no epidemic exists in Constantinople. March 14 we met by appointment Dr. S. C. Zavitziano, one of the sanitary officials of the city, and also a sanitary correspondent in Turkey of the U. S. Marine-Hospital Bureau, with whom we spent much time, and who gave us some valuable information, being thoroughly conversant with the sanitary condition not only of Constantinople, but of the Ottoman Empire; we are also indebted to him for a series of official documents on these subjects. Speaking to him about the excessively filthy condition of the streets of this city, and of the apparent indifference there was to the garbage and offal which found lodgment in the gutters where it had been thrown or swept from the houses or other establishments, the doctor said that, notwithstanding the unsanitary condition of the streets, the health of the city was usually good, and it was only at times when some epidemic disease like cholera found an entrance that the unsanitary conditions seemed to tell against them.

He said, as a partial excuse for the condition of the streets, that it was almost impossible to get the Sultan's orders obeyed because of the general ignorance that existed among the subordinate officers who were charged with carrying out the orders issued. He said it is the rule in this country when an officer does not understand an order to do nothing, the penalty for inaction being less severe than for executing a wrongly interpreted order. There is in this country a commission known as the "superior council of health." This commission receive information relative to the existence of disease of any kind within the realm from the office of the minister of state, to whom all Turkish consular officers report. The minister transmits to the board of health such dispatches as he wishes to. The duties of the board are simply advisory: they have no power to direct. All orders come immediately from the Sultan. The doctor stated that the preparations for meeting an epidemic are very meager, for "we have no money." Then everything is deferred until the peril is upon us, when arrangements are made in haste, and are of course inadequate. There are great natural advantages for a quarantine station at the head of the Bosphorous (the Black Sea entrance), but accommodations there are altogether insufficient because of the lack of money needed to put up the necessary buildings and to make the quarantine establishment all that it should be for the protection of the city.

Epidemics of cholera have always been severe in the Turkish dominions, especially in Constantinople, because of unsanitary conditions. During the last epidemic 2,500 deaths from the disease occurred in Constantinople in one day. At best the drainage of the city is not good; the sewers are few, shallow, poorly constructed, and easily crushed, thus stopping the outflow and bringing a pool of sewage to the surface with the usual results. The doctor said there were occasionally epidemics of plague brought here by people who come from the country where it originates.

The disease is contagious, characterized by buboes and glandular swellings all over the body, and it usually has a fatal termination in a few hours. It originates in those countries where rice is grown, and where the natives are filthy in personal habits and method of living. They build mud huts on the river bottoms, piling up the spongy earth to make a floor, then walls of mud are raised for covering. When the rivers rise, as they do at least once a year, the earth underneath the hut becomes thoroughly watersoaked, and a short time thereafter the plague appears. Smallpox is always present, but it does not assume the serious form observed in England or France. Prejudice against vaccination, though still very strong, is less decided than formerly. As the head of a large foundling hospital, the doctor now vaccinates every child that is brought in. In years past this could not have been done because of the prejudice against it. Sanitation moves very slowly for two reasons: When a proposition is made to introduce some sanitary method not hitherto in force the first thing done is to consult the Koran; if nothing is found therein which can be construed by the interpreters against the proposed measure there is no objection to its being done; but any scientific truth which in any way conflicts with the interpretation of the Koran, or with its teachings, could not obtain a footing there for an instant.

When the interpreters are in doubt as to whether the proposed methods conflict with the teachings of the Koran they give the benefit of the doubt to the Koran, and that is an end of the matter. If the interpreters find nothing in the Koran which in their judgment prevents carrying out the proposed measure the next difficulty is to get the money with which to do the work, which is a most serious matter. Under these circumstances you can understand, said the doctor, "that all sanitary measures move very slowly, and in consequence I am extremely apprehensive." I can not close my eyes to the fact that we are in great danger, for we have no appropriate preparations to meet the epidemic which is approaching us on both sides, from Persia and Russia. The Sultan is very anxious to do all that he can to prevent the entrance of cholera into the country, but lack of means and inefficiency among the subordinates who are directed to carry out the instructions they receive prevent proper preparations, and to-day it is more by good luck than successful management that the disease has been kept out of this city. The central authorities issue the most positive orders to the local authorities in the provinces, but there they do not seem to realize the dangerous situation they are in, and little is done to suppress the spreading of the scourge; even the lazarettos which were ordered established along the Russian boundary line, by reason of their mismanagement, do not prevent the disease from getting through, and it has already passed the boundary and exists within the Empire. The officials are careless, to say the least, concerning the introduction of the disease, and the doctor cited an instance in which a body of troops came from Erzeroum, declaring to the quarantine officers, falsely, that they came from another place where the cholera did not exist, and, passing the sanitary cordon without undergoing quarantine, they introduced the cholera into the first place where they stopped. At Yemen it is now known that the frightful epidemic which took place there and which caused great loss of life was introduced by a party of slaves who were clandestinely landed in violation of the law in order to avoid quarantine regulations, the introduction of the disease being traced directly to them. It was in that province that the natives prevented the physicians sent by the Government from doing anything to stop the spread of the disease, and would not allow them to minister to the sick. Several thousand of the population died.

That the quarantine regulations which are so necessary to prevent the introduction of cholera into the Empire of Turkey are not efficiently administered the following series of documents obtained for us by Hon. D. P. Thompson, minister to

Turkey, from the sanitary officials of the Imperial Ottoman Government will explain. They were forwarded to us in London, accompanied by the following letters:

No. 27.] LEGATION OF THE UNITED STATES OF AMERICA,
Constantinople, April 3, 1893.

Dr. W. KEMPSTER, *London:*

SIR: I have the honor of inclosing to you all the correspondence of sanitary regulations in regard to cholera and other infectious diseases and the quarantine regulations adopted by the Ottoman Government: also such information as we have been able to collect in relation to the leprosy. This information is difficult to obtain here on account of the meager publications of this Government, most of which are published in the Turkish language. Dr. Zavitziano has diligently collected all that is obtainable, which I submit to you.

Respectfully, yours, D. P. THOMPSON.

Inclosed was the following letter:

Dr. WALTER KEMPSTER and Dr. FAIRFAX IRWIN:

The United States Marine-Hospital Service is inquiring about sanitary regulations of the Turkish Empire; especially they wanted copies of orders that have been issued by the Imperial Ottoman Government relating to quarantine, the cholera, or other contagious and infectious diseases; also any documents relating to leprosy, and, besides, any documents relating to emigration or immigration.

There was a law about emigration and immigration, but nobody knows about it; it is not in force since a long time, perhaps since it has been issued.

About leprosy I may say that there are no regulations or orders issued; it may be that there are in the Koran, but nobody knows about them. I forward 20 documents, of which 11 are printed and 9 polygraphed. Of these 7 are regulations, or orders, which are executed by the different lazarettos, and the 13 others are instructions, or desiderata, which have never been realized or put into execution. Among the polygraphed documents there are 4 concerning improvements to be made at the lazarettos. There does not exist any document, regulation, order, or instruction concerning other contagious or infectious diseases except cholera, yellow fever, and plague.

SPIRIDION C. ZAVITZIANO,
U. S. Sanitary Commissioner, Constantinople.

APRIL 3, 1893.

The polygraphed documents referred to concerning improvements to be made at the several lazarettos we have translated entire; from the others we have made such selections relating to the same subject as we considered necessary to make their meaning clear without giving in extenso the lengthy but unnecessary explanations.

The quarantine station of Camaran, one of the most important in the Dominions, is situated on an island of that name, in the Red Sea, near the southwestern coast of Arabia, and not far from the city of Hodeida, at which place many pilgrims on the way from India to Mecca disembark and walk to the "holy cities." This station is intended to prevent the pilgrims from India taking cholera with them to Mecca or carrying the disease back from Mecca to ports on the Arabian Sea. Tens of thousands of pilgrims pass and repass this station annually. It is to this station, therefore, that particular attention has been paid, and several commissions have been sent there by the Ottoman Government. They have examined the place and reported what was necessary to be done to make this quarantine station efficient, but at the date of our visit the suggested improvements had not been made.

REORGANIZATION OF THE OTTOMAN LAZARETTOS OF CAMARAN AND ABOU-SAAD-VASTA.

(*Translation of document No. 1.*)

Summary instructions of the superior council of health recommended to the attention of His Excellency Dr. Hadji-Arif-Bey, chief of the mission, and of his collaborators:

First. In principle a lazaretto should be isolated in an absolute manner from all habitations and from every group of habitations. Experience has demonstrated the danger and insecurity resulting from the villages situated upon the isle of Camaran, notably from that which is in proximity to the quarantine establishment at the south of the bay. From this is evident the urgent necessity of proceeding to the evacuation from the entire island of every dwelling occupied by other persons than those who are submitted to the régime of the quarantine. That is a condition sine qua non.

Second. To assure to the pilgrim vessels easy access to the bay of Camaran, at the entry and exit, as well as good anchorage, there must be fixed buoys, beacons, and all other means judged necessary by competent navigators. This measure has long been called for by navigators who have had to suffer from the need of it repeatedly and gravely, because of the lack of security at all these points.

Third. The question of debarking and embarking the pilgrims has been many times discussed by the chiefs of the service of the lazarettos as well as by the council of health; the present system is full of inconveniences.

It is desirable that transportation (to and from the ships) should be made by means of large boats drawing little water, which shall be towed by one or more tugs. The commission will have to decide which will be the best system, and what would be the expense if the Hadji's pilgrims must meet the expenses necessitated by this mode of transport, and whether this should be executed under the care of the sanitary administration, or by special enterprise.

This is a question which concerns the pilgrim vessels and not the council of administration of the lazarettos.

The question of the wharves, which is so important, should be solved by the construction of a special lazaretto for the choleraic, and by the construction of a wharf for each division of the lazaretto.

Fourth. The entire island being in the first place free from every inhabitant, it will be permissible for the commission to choose the best site and most suitable land, reconciling as much as possible the two principal interests of navigation and the hygiene of the quarantined.

The first point to examine is the degree of proximity to or distance from the shore. This point will be determined by several conditions, of which the principal are: The elevation of the coast above high-water level; the stability of the coast line and its geological formation, etc. All conditions should serve to regulate the choice of the site and the question of drainage, and of providing the water supply, to be mentioned hereafter.

In principle the distance of the site of construction should be as far as possible from the shore; but the surface at this point is lower, and the earth easier of encroachment by the sea and the infiltration of the tide.

The first constructions were rather distant from the sea; they have been brought nearer in order to spare the quarantined the long walk. Another question which the commission must solve is the water supply and the disposition of the excrement, and their relations to the establishment.

As to the sites of the divisions of the lazarettos, they will be subjected, as much as possible, to the following exigencies:

1. To the facility of ventilation, which must be sufficient without being exaggerated, taking into account the prevailing direction of the winds.

2. To the nature of the soil and its exposure to the light and air.

3. Finally, to its geological composition, which should assure stability and be upon a compost as much as possible made up of durable beds of large gravel, possessing a certain altitude above the surrounding lands (a plateau of medium elevation), a little undulating, but easily levelled, and, above all, permitting easy drainage toward the sea of the water and the detritus carried to this marine reservoir, where all the dangerous material from the buildings should go. The commission will have to study the hygiene of all these elements, and others which will appear, after careful examination made upon the spot.

4. Here our indications will be necessarily brief, inasmuch as it is only upon the spot that the commission can decide upon the sort of buildings, the mode of construction which will be appropriate to the climate, to the kind of life, and the preferences of the quarantined as well as of the needs of hygiene in general.

As to the materials of construction, the base of the buildings should be of stone; for the remainder, wood. The buildings should protect their inhabitants from the heat of the tropical sun and from the rains and strong winds of the monsoon, which sweeps the shores of the isle of Camaran.

One of the principal precautions is that of securing perfect evenness and impermeability of the soil of the dwellings in order to avoid the infiltration into the soil of the débris, alimentary or other, of the pilgrims.

Upon the commission will depend the choice of the materials and the proper means to insure the complete hygiene of the soil and of the other parts of the dwellings, taking into consideration the particular conditions we have noted here·

In order to obtain sites for the constructions a large area must be chosen to secure the proper space. The distance should be at least 1 kilometer (3,280 feet) between the divisions or groups of buildings in order to assure isolation and salubrity.

A division is a complete organization comprising in its service a sufficient number of special buildings to provide quarantine, hospital, mosque, accessory services, latrines, cisterns for water, dwelling for the physician of the division, etc.

Each division will be composed of 20 dwellings at the most. Each room should be sufficiently spacious to afford at least from 15 to 20 cubic meters of capacity (550 to 700 cubic feet) for each pilgrim, well ventilated, conveniently arranged, and easy to keep clean.

The buildings should be separated by a distance of at least 100 (about 300 feet) meters.

The most convenient form of these buildings will be the pavillion, without upper floors. The special division, devoted to the traveler attacked by cholera, should be isolated at least 2 kilometers (about 6,500 feet) from all the others and from every habitation. It should be constructed of reeds or boards in a manner to be easily destroyed after having been used, or to be transported and reconstructed at need upon another site.

Sixth. Drinking water and disposal of dejections.

This service is the most important of all those at the establishment of Camaran.

The quantity of water should be largely abundant, but the quality of the best as nearly as possible ("mais leur qualite devrait etre de premier choix autant que possible"). In this connection it should be stated that the water of the island is of inferior quality, brackish and perhaps impure. After the exhaustion of the wells it would be preferable not to use them either for drinking or the preparation of food, but to use distilled water, as is done at Steamer Point, near Aden, and other places on the Red Sea. The commission is charged especially to study and solve this question. If obliged to have recourse to the water in the wells it is necessary to be sure of the purity of the water and of noninfiltration. It is known that it (the water) comes largely from the salt water of the bay, through the beds of sand which make the shore ; that is to say, the water of the bay should be guaranteed against receiving the filth and the dejections from the latrines of the quarantined, which would establish a vicious circle, serving to the quarantined the water soiled by their dejections and containing the scourings and morbid germs from themselves or from those who preceded them at the lazaretto; in brief, by reason of this very defective system it would be much better to make use of distilled water. In all cases a chemical and bacteriological examination of the waters of the wells and others of Camaran will be necessary.

As to the water-closets, they should be numerous for the needs of the pilgrims; they should be built sufficiently far from the dwellings, and solidly constructed, so as to prevent all infiltration of the matter into the neighboring soil. They should be inodorous, and constructed in a manner to permit perfect cleansing.

The system to adopt will be the movable cesspool to contain the dejections, composed of a receptacle of sheet-iron, strong and absolutely impermeable, easy to transport to a distance to be emptied, cleaned, and disinfected. This system appears preferable to carrying away the evacuations by means of pipes of cast-iron or other material, which must be conducted far into the sea and would be very expensive, and the mouth of which would be subjected to movements due to the changes of the tides.

Two conditions are indispensable to insure the success of the movable apparatus. The first is, to keep them in such a condition that the apparatus can not foul the soil of the floor of the dwellings or their surroundings through which the infiltrations could reach the wells; the second is, that the dejections should be thrown into the sea far enough away from the shore where the lazaretto will be constructed and where the wells and springs of water are found. This material should be thrown in a direction which will not possess the serious disadvantage of being carried back by the tide toward the coast, where it can flow by infiltration through the porous sand either toward the springs of water or toward the buildings of the lazaretto. The greatest precautions should be taken to prevent the return of the dangerous particles of the dejections toward the place of their origin, constituting a sort of auto-infection of the pilgrims by their own filth.

The council of health invites the special attention of the commission to all these details, and to many others which can not enter into a brief statement of the subject. The chief question which it will have to solve, a double question, although being but one, since the problem is composed of two principal items, is the water and the latrines; they are interdependent one upon the other; upon them the successful solution of the hygiene of the quarantine depends.

Seventh. Although the subject of disinfection is a matter to be treated by itself, it may not be out of place to remind the commission that in the project of reorganization and construction it must occupy itself with the question of a special place for the installation of the disinfecting apparatus.

The council is of opinion that there is no good cause to give up the disinfection chambers, but that the needs of the service demand a notable increase of its apparatus as well as for the establishment at Camaran as for that at Abou-Saad-Vasta.

Eighth. It remains also for the commission to occupy itself with the last-named establishment; to reorganize and complete it after the plans and estimates which have been proposed and decreed and which have received the approbation of the superior council of health. For the rest, and notably for the question of the water supply and for the service of the water-closets, the commission must guide itself by that which has been said above for the establishment of Camaran, taking into account the differences inherent to the localities and the space and resources of the country. It is for them to decide whether the supply of water at Abou-Saad-Vasta should come from the cisterns already existing or to be constructed or from the infinitely more advantageous source—the distilling apparatus.

Ninth. Finally, the council entertain the wish that the several members of the commission will have the kindness to rely at all times that they judge suitable upon the willing concurrence of the consular representatives of the armed powers, a concurrence that they may be assured of finding sincere and devoted to the work of common interest in the good organization of the quarantine establishments of the Red Sea.

Tenth. Cemeteries: Place them at least 3 or 4 kilometers (about 2½ miles) distant from the divisions, and to the leeward of the establishments, upon land neither too dry nor too wet, not subject to infiltration, and fulfilling other hygienic conditions; the commission will have to choose a suitable site.

Dr. MAHE,
Chairman.
COZZONIS,
Dr. VITALLIS,
Dr. HAGEL,
Dr. VAFIADES,
TOSCANI,
Dr. STEKOULIS,
Members.

From the next document in order of time we translate the following extracts:

The superior council of health on Februrry 24, 1891, issued a circular relating to the epidemic of cholera, which had then subsided, but which they anticipated would break out again in the spring; to prevent if possible the usual ravages of the disease they called attention to the following matters:

That houses in which there had been cases of cholera should be again disinfected; also, that the cesspools and drains should be put in proper condition and thoroughly inspected.

They directed that the effects, old clothes, bedding, etc., which had been used by cholera patients should be destroyed. The graves of those dead with cholera should be covered with lime, and the authorities should prevent the burial of anyone dead of cholera in a cemetery within the walls of a city, but cause them to be buried at a distance from the city and away from traveled roads. The removal of all species of filth, cleansing water-closets, drains, gutters, and roads; this should be the subject of vigorous watchfulness by the authorities. The subject of drinking water is of the first importance, and the authorities should see that the supplies are not contaminated by cesspools or by seepage from cemeteries, or water closets, or any other contamination, and that it should be of good quality and sufficient for the needs of the population.

"The localities bordering upon those attacked by cholera last year, and which have had but little or no cholera, should be considered the most suspicious and dangerous, and it is most important that the authorities should supervise these places." They enumerate a large number of villages and towns in Syria which need oversight. They also require the authorities to inspect the nomadic tribes in their vicinity; also, along the course of the Euphrates. They suggest the establishment of local health authorities to carry out their plans, providing even for the oversight of "butcher shops," to secure healthy alimentation for the population; also, for the oversight of prison and "unhealthy houses," as well as "highways, gutters, and drains."

The commission formulated rules concerning outbreaks of cholera, and recommended that on the first appearance of the disease the local authorities should assume the management and control of the case, isolating the patient, closing the house and forbidding entrance to it; "the sick to be taken far from the well and put under tents, the location of which should be changed at least once in three days and removed to a new site. Squads of disinfectors should be formed to go from place to place and disinfect under the direction of an inspector.

While leaving the selection of disinfectants to the "local physicians," they suggest the following different methods:

"For washing the face and hands of those who approach the sick, the sulphate of copper is to be exclusively employed in the proportion of cupric sulphate 12 grains, to water 1,000 grams.

"For the disinfection of closets and vomited matters, cupric sulphate 50 grains, to water 1,000 grams."

They recommend packets of sulphate of copper, 25 grains each, to be left with the family; one or two packets to be dissolved in water as occasion requires. "Soiled linen is to be immediately immersed for two hours in a strong solution of sulphate of copper; linen not soiled, in a weak solution of the same.

"Coats, etc., of the sick to be boiled in water for half an hour.

"Clothing, soiled by choleraic dejections to be plunged for one hour in a strong solution of sulphate of copper, chloride of lime, or corrosive sublimate; the same for carpets, floors, and furniture. The mattress, bedding, coverings, etc., must be destroyed, if not, they should be disinfected in an hermetically sealed inclosure by sulphurous acid gas." To insure efficiency in disinfection of clothing, bedding, etc., "it is desirable to make use of special apparatus such as perfected chambers for disinfection; in all cases, if it is possible to do so, it is preferable to destroy them.

"Disinfection of buildings will be by sulphurous acid gas."

They suggest that those dead of cholera "should be buried 2 meters in depth, and the grave covered with lime," and that the cemeteries should be at a distance from all habitations.

Under the head of "general measures" the superior council of health suggest provisions for quarantining against the infected localities contaminating others; and to this end recommend "the establishment of cordons and of posts of observation." When the infected locality "is easy to surround the cordon may be of some service, but if several localities are infected the cordon becomes useless and even harmful. When several localities are infected it is best to establish an epidemic zone which may even contain localities yet free from disease." They provide for "posts of observation, the posts to be established upon caravan routes, or frequently traveled roads, and to be under the immediate direction of physicians, to the exclusion of all other interference, and under the auspices of authorities who are required to maintain them.

"All persons passing these 'posts of observation' from contaminated countries must be examined," and under the discretion of the physician in charge people or merchandise may be disinfected or not, as he shall determine. "It is incumbent upon the Government to provide for the expenses occasioned by the personnel of these establishments, whether they are fixed or movable, wherever they are situated, and to furnish gratuitously all the means necessary for the care of the sick for disinfection, and for all that which is prescribed by the physicians in charge of these quarantine posts. This is an essential point to which the council and the sanitary administration call the attention of the local and governmental authorities."

In conclusion, they say that in all those districts affected last year, and in their neighborhood, it is necessary to "appoint speedily physicians for the municipalities, and a competent committee charged with carrying out from the present time a strict execution of preventive measures of hygiene and of sanitary police above detailed, and that without waiting for the reappearance of the malady. The localities threatened should be immediately supplied with all the medicaments and disinfectants necessary.

The local governmental authorities should announce by telegraph immediately every suspected case which may appear in the localities attacked by cholera last year or in the neighboring localities, and they should proceed in the treatment of it as though it was a case of cholera; and they add that "the measures to be taken by the local authorities to prevent the spread of the disease from the contaminated into the uncontaminated regions should be more efficacious than they had hitherto been.

"These measures of defense will be put into execution promptly in upper Mesopotamia, Syria, and neighboring provinces. They will also be applicable to Hedjaz, where cholera raged at the date of the last pilgrimage, to wit, Djedda, Mecca, and Medina."

These measures were adopted by the superior council of health on February 24, 1891, and were very desirable; but in March, 1893, the "governmental authorities" had made no such provisions as had been wisely recommended by the superior council of health.

The next document in order is as follows:

THE NECESSITY OF PUTTING THE QUARANTINE ESTABLISHMENTS OF THE OTTOMAN EMPIRE IN REGULAR WORKING CONDITION WITH THE LEAST DELAY.

(*Translation.*)

In the presence of the contingency of the reappearance of cholera in Turkey, within a few months the council and sanitary administration believe it their duty to renew to the Imperial Government the observations which they have submitted, with many repetitions, in order to call the attention of the Government to the condition of the lazarettos of the empire. Among the establishments of this sort three only can be actually considered as destined to receive the quarantined when they shall be repaired and organized.

First, Cavak, destined for the traffic of the Black Sea. This establishment should receive with the least delay extensive improvements designed to put it in a satisfactory condition for the exigencies of the sanitary service. Later it should be enlarged, perhaps replaced; in any event reorganized upon a new plan. In the meantime, and, in this time of necessity the Imperial Government should place at the disposition of the sanitary administration a certain number of old vessels capable of serving as floating hospitals in order to supply the actual insufficiency of the establishment at Cavak.

Second, Smyrna. This establishment will be in a satisfactory condition when it has received some repairs to receive the traffic from the septentrional region of Anatolia, Constantinople, and the Black Sea.

Third, Beirut. The superior council of health have for a long time repeatedly made know to those in authority the insufficiency of this establishment to serve as a lazaretto for those traveling to the provinces of the southern part of the Empire. Its position in proximity to the city constitutes a danger for the latter. Besides it is not in a condition to receive the quarantined, which fact has been repeatedly reported by the council of health. It has also resulted in well-grounded complaints which have been presented by the persons who have been recently subjected to quarantine in this establishment.

It appears that the repairs asked and promised were but partially made, and too late. For these reasons the transfer of the lazaretto of Beirut is a matter which should receive attention as speedily as possible. The Imperial Government will have to choose an appropriate site to be designated upon the coast between the Isle of Rhodes and the coast to the south of Syria; by preference upon an island. It is unnecessary to state that the site should have a good anchorage for vessels, easy isolation, and be as convenient as possible for provisioning with food and water. It is upon this new site that the Imperial Government should erect an establishment capable of accomplishing the end proposed at the earliest date in order to prepare a lazaretto, which may become necessary at any moment. In time of necessity branch lazarettos will be provided for the traffic of the Adriatic.

Fourth. It is equally indispensable to create at the earliest moment a quarantine establishment at the entrance of the Persian Gulf for the defense of Mesopotamia and for the traffic of the Indian Ocean. This establishment should be situated at Fâo, or in its vicinity. All the other quarantine establishments of Turkey, such as those at the Dardanelles, of Salonica, of Tripoli, in Africa, etc., should be considered absolutely unfit to receive travelers.

Fifth. It is most indispensable that the Imperial Government should provide with the least delay the above-mentioned lazarettos of Cavak, Smyrna, and of Syria; and the necessary preparations for the disinfection of the quarantined and of vessels. Besides the ordinary means of disinfection, chemical and mechanical, each one of these establishments should be furnished immediately with special apparatus for disinfection; especially with apparatus for steam under-pressure, similar to that which is used elsewhere regularly, in like circumstances, and which has very recently been used for the purpose of disinfection in the establishment in Egypt for the infected traffic from Hedjaz.

As to the provinces of Arabia and of the Red Sea, these establishments should be organized. In the near future a commission should be directed to investigate the establishments upon the Red Sea.

CONCLUSIONS.

1. The Imperial Government should reorganize speedily the lazaretto at Cavak, remove that of Beirut and transfer it to an appropriate location. A lazaretto should be established upon the Persian Gulf at Fâo. Finally it should make important improvements at the quarantine establishments of the Red Sea, at Abou-Saad-Vasta, and, above all, at Camaran, for the purpose of assuring protection to the pilgrimages made to the holy cities in Hedjaz.

2. An indispensable condition, one which should dominate all others, is the acquisition of apparatus and special methods of disinfection (steam, etc.), which should be provided with the least possible delay for all the quarantine establishments because of immediate necessities, especially at Cavak, Smyrna, and Syria.

Chairman Dr. MAHE.

Read at the session of the superior council of health, March 19, 1891.

This report was supplemented by the following communication:

REPORT OF HIS EXCELLENCY DR. ARIF-BEY UPON HIS MISSION TO HEDJAZ.

(*Translation.*)

[Read at the session of the superior council of health, October 20, 1891.]

GENTLEMEN: I have the honor to present to you my report upon the mission with which you charged me at the meeting of the 14th of April, 1891, to proceed to the scene of the pilgrimage for the year of the hegira 1308 in the capacity of a special commissioner. At the same time the Imperial Government charged me to visit the lazaretto of Camaran before going to the holy cities, to investigate the condition of this important quarantine establishment. I immediately left Constantinople for Alexandria, thence by way of Suez, where I embarked and touched at the ports of Djeddah, Souakim, Massasuah, and Hodeida on the 18th of June, and soon thereafter arrived at Camaran. I passed two nights on this island, and during my stay was enabled to inspect two encampments of pilgrims from India who were there at that time. I was accompanied by Dr. Stiepovich, chief of the mission at Camaran, and the Sheik Muhammed Atta, vice-consul of England. With the concurrence of Dr. Stiepovich I took notes of some modifications and improvements which are absolutely necessary at the lazaretto of Camaran.

1. It is urgently necessary to construct three new encampments upon the bank, and two docks should be built of stone.

2. As the second and fourth encampments are not conveniently situated, it is best to suppress them; the material can be employed in the construction of the new encampments just mentioned.

3. It is well known that the soil of the island is salty and damp, and conscience will not permit us to compel the pilgrims to sleep upon it. There should be erected in the said encampments benches of wood, long and wide enough for a man to lie comfortably upon them. These benches should be built all around the sheds. The pilgrims will then have a comfortable bed, and can dispose of their effects underneath and thus avoid encumbering the place.

4. At the other lazarettos there are special buildings designed for rich people and also for families who do not wish to live in the sheds for 50 pilgrims. It is therefore necessary to build at Camaran in each encampment two structures designed for this class of people. Each building should have four compartments, each division having a private door. Two of the buildings already there can be adapted to this purpose.

5. Latrines must be built upon the shore, the same as in the lazaretto of Abou Saad-Vasta. If this is not possible movable water-closets must be fitted up.

6. At these encampments there are no kitchens for the preparation of food. This is a serious inconvenience, which must be remedied immediately. Each of the encampments should be provided with requisite ranges.

7. There has been constructed at Camaran a large reservoir, and at the side some wells. These works have been costly. Unfortunately the reservoir has already given way, and is in no condition for use. For the time being each encampment has constructed three small reservoirs, which are not sufficient, and when there are a larger number at the lazaretto they are obliged to transport water on the backs of donkeys from the wells of the cities located farther up. I must add that of all these wells five only furnish good water. There are many complaints about the quality of the water furnished to the pilgrims. It is necessary to construct in each encampment two more reservoirs and to fill them with water before the first pilgrims arrive.

The water keeps very well even in the reservoirs already there. I have examined the water which stood in one of these for the past three months and found it very good. Another well should be sunk if drinkable water could be found.

8. It is necessary to construct in each encampment a building for fumigating.

9. For debarking and embarking the pilgrims recourse is had to small sailboats, and each pilgrim is obliged to pay 5 piasters.

This is a great inconvenience, for when the wind does not blow the boats can not land, much time is lost, and the Hadjis suffer much from the heat of the sun. The lazaretto of Camaran should be furnished with a tugboat and six large flat-bottomed boats. The expense of these would be covered at the end of a few years with the revenue resulting from the tax upon each pilgrim.

10. It is necessary to construct two large buildings for the military guard and two smaller ones for the officers, each of which should be provided with kitchens and water-closets.

11. Finally, it is necessary that the food be furnished by merchants after having been contracted for and the contract approved by the authorities.

After making this inspection I embarked for Djeddah, where we arrived after four days, and shortly after I left for Mecca.

In this city nothing has been neglected for the general cleanliness. Unfortunately, as you know already, the cholera had broken out there. This year they put the abattoirs and ditches at Mina on the east side and at the end of the valley. A military cordon has been established there and no victim of cholera has been permitted to enter the encampment of the pilgrims. * * *

At the lazaretto of Tor, we passed the customary quarantine of thirteen days.

During the time I visited the encampment, the hospitals of the pilgrims, and all the buildings. I observed that all the buildings for the pilgrims communicate, no matter from what country they come nor what the date of their arrival. This is a serious irregularity, and it is very fortunate that the cholera has not broken out this year in the encampment of Tor.

At Smyrna I profited by the detention of the vessel for twenty-four hours to visit the lazaretto of Clazomenes. At that time there were no persons in quarantine, but I visited the pavillion of disinfection, and Dr. Crenderopoulos explained to me the working of the disinfecting plant. In the pavillion there is room enough for another disinfecting chamber, but experience thus far demonstrates that one is sufficient.

(Signed) DR. ARIF,
The Vice-President of the Superior Council of Health.
CONSTANTINOPLE, *October 20, 1891.*

The next report reiterates with much urgency former recommendations concerning quarantine, and shows that the suggestions of the superior council of health had not been made effective.

REPORT OF THE COMMISSION ON THE LAZARETTOS OF THE EMPIRE.

(*Translation.*)

[Presented to the superior council of health at its extraordinary session of the 22d of October, 1891.]

GENTLEMEN: In approaching for the second time within eight months the subject of the condition of the quarantine extablishments of the Empire, the special commission recalls to the superior council of health the constant efforts which it has made for many years past to assist those who are in authority to reach a solution of the difficulties.

The report, dated March 19 of this year, entitled "Necessity of putting the quarantine establishments of the Ottoman Empire in regular working order with the least delay," which was addressed to the sublime Porte upon the contingency of the reappearance of cholera in Turkey within a few months, contained the substance of all the propositions that we have to make to you upon this great subject, and we present them without preamble.

1. In the first place, we proposed to have returned to the Imperial Government the lazarettos repeatedly declared improper for service at Beirut, Salonica, Gaza, and Tripoli in Africa; for these there would be obtained in exchange two sites, one upon the coast of Syria, another upon that of Tripoli, the essential conditions being the isolation of the buildings, good anchorage, sufficient area, and an assured supply of drinkable water, and a place which may be easily provisioned.

2. Concerning the lazaretto to be constructed upon the coast of Syria, you have repeatedly condemned it, because of its unfortunate proximity to the populous city of Beirut, which place grows from day to day. The site to be chosen in this vicinity should be in a district where the lazaretto will not be compromised in the near future, while meeting all the necessary conditions.

After having taken cognizance of the various places proposed, the commission believed it to be its duty to call attention to the sites of Abou-Halka, N. NE. of Beyreut, Nahr-el-Kelb, and Youmourtalik; this last being the least desirable because it is situated upon the coast of Caramanie, beyond Syria proper. The Imperial Government should send to these places a technical commission, to which should be added a member of the council of health, in order to choose a suitable site, and then erect an establishment capable of receiving the quarantined; such an establishment as is indicated by the latest progress of science.

In exchange for the lazaretto of Tripoli in Africa, declared useless because of its bad state and its proximity to the city of that name, the Government should construct another establishment on a site chosen in the same manner and governed by the same conditions as the preceding. The commission think that there should be a lazaretto upon the coast of Tripoli, far from the other quarantine establishments of Clazomenes and Syria.

4. Concerning the lazaretto of Clazomenes we can not too strongly recommend its maintenance in a satisfactory condition by introducing all improvements possible. The erection of a chamber of disinfection constitutes an important progress in this establishment, and it may be necessary to erect a second, for which the place has already been arranged in the pavillion.

5. On the coast of the Black Sea we possess only the lazaretto of Cavak, which is situated in the narrow valley of Monastir-Aglizy, which has insufficient circulation of air, is without suitable anchorage, and without good drinking water. In our report above cited, March 19, 1891, we said that this establishment should be enlarged, perhaps replaced; in any event, reorganized upon a new plan. But two things confront us for the moment, two things without which we can not be guaranteed against a serious epidemic coming from the Black Sea. These are, first, the erection of two suitable buildings, well built, in the little creek of Monastir-Aglizy; and second, the establishment of a system which will supply water to the lazaretto of Cavak and the pavillion of disinfection which will soon be constructed there. The Imperial Government should consider this without delay.

6. In the Red Sea there is much work to be done at the lazaretto of Camaran. You have taken cognizance, gentlemen, of the reports of Drs. Stamakiadis and Stiepovich; also, that of the consul of the Netherlands at Djeddah, and, finally, that of our vice-president, His Excellency Dr. Arif-Bey. These reports show that there is more than ever need for urgency in sending the technical mission according to the recommendations of the council.

This special mission, besides the inspector-general, Dr. Cozzonis-Effendi, will consist of scientific men of recognized ability to be named by the Imperial Government upon suggestions from the superior council of health. It will be the work of this commission to establish the basis of the reorganization of the most important of our quarantine establishments, taking into account the conditions which they observe of the pilgrims coming from the countries where the cholera is continually found, and to whom are attributed the ravages caused by the scourge of the two last pilgrimages. The first thing necessary is that the Imperial Government shall oblige the inhabitants of the island to evacuate it completely, and from this date, and to install them upon the neighboring coast, for, according to authoritative statements, it is to them principally that we must attribute the dangerous communication with the neighboring countries of Arabia.

This evacuation ought to be made rapidly if the Imperial Government wishes to order it. It is necessary also to send immediately two chambers of disinfection to Camaran; the same model as that at Smyrna, to be paid for from the funds of the quarantine reserve, which has already been decided by the council. These chambers should be erected upon the most suitable sites. Later, it will be necessary to send other disinfection chambers to the Red Sea, especially to the lazaretto of Abou-Saad-Vasta.

7. Finally, a special commission should visit the lazaretto for the Gulf of Persia to choose a suitable site on the coasts of Bassorrah or of Fâo. Meanwhile, and considering the urgency, the Imperial Government should establish as soon as possible at Fâo, or its environs, one or two buildings well arranged, and suitable to receive travelers. It is there that contaminated travelers coming from India should be subjected to quarantine, and all necessary measures should be taken to prevent the travelers from eluding the quarantine by debarking at Moham-

marah, whence they may enter at liberty the towns of Bassorrah, Bagdad, and other localities in Mesopotamia.

Such, briefly summarized, are the measures that the commission proposes to take without delay, and in an efficacious manner. Putting the quarantine establishments of Turkey in good condition, the reorganization of some, and the creation of those which are lacking, necessitates large expenditures which can not be approximately estimated until after the preliminary studies and plans are made, which is not the work of the council of health.

It is unnecessary to say that these expenses fall entirely upon the Imperial treasury; the expenses necessitated by the purchase of the arrangements for disinfection will be charged, as in the past, to the eventual surplus of the quarantine receipts. But it is clear that the efficiency of these arrangements can only be obtained when the Imperial Government furnishes suitable establishments which will permit them to do perfect work.

It does not belong to the superior council of health to suggest the methods by which the above-mentioned expenses are to be met. Doubtless the value of the establishments returned to the Imperial treasury, such as those of Beyreut, Salonica, Gaza, and of Tripoli in Africa, would compensate in part for the expenditures to be made. But there will remain a considerable deficit which the Imperial treasury should meet, whether it be by an appropriation for the entire expense, or whether by means of annual appropriations proportionate to the needs of construction, of reorganization, or of improvement of the quarantine establishments, we are unable to suggest.

In conclusion we make the following propositions:

First. To return to the Imperial Government the old lazarettos of Beyreut, Salonica, Gaza, and Tripoli in Africa, because they are absolutely worthless. It should establish the following lazarettos: One upon the coast of Syria in the vicinity of Beyreut, the commercial center of that province; one of less importance in the vicinity of Tripoli in Africa, and a similar one at the mouth of the Chat-el-Arab, and another at Fâo.

It should reorganize those of Cavak and Camaran, improve and maintain that of Smyrna, also that of the Dardanelles, which can be used in case of urgent necessity. The considerable expense resulting from this work will be charged to the Imperial treasury.

Second. The preparations for disinfection should conform to the requirements of modern science, especially with reference to steam disinfecting chambers, which should be erected in all quarantine establishments throughout the Empire wherever thought necessary, and at the expense of the eventual surplus of the quarantine receipts.

Third. The superior council of health declares most urgent the prompt putting into execution of the measures proposed in the present report. The reasons for it have been many times laid before the Government of the Sublime Porte, especially in the document of the council dated March 19, 1891. The council can but regret that its reiterated reports have not been followed, and it rejects absolutely the criticisms upon this matter of which it has been the object, and which are without foundation. In consequence the superior council of health, as well as the sanitary administration, declare once for all that without the prompt and complete accomplishment of the propositions included herewith they can not guarantee the security and efficiency of the Ottoman quarantine establishments; and they find themselves under the trying necessity of declining all responsibility because of the present imperfect precautionary measures relating to maritime traffic, with the oversight of which they are specially charged.

If the council approves the conclusions of this report the commission proposes that copies should be made in the French and Turkish languages and sent to His Excellency the Minister President, and that if His Excellency considers it proper, a delegation composed of members of the council should call upon His Highness the Grand Vizier to present them to him, following the usual custom.

Dr. J. MAHE, *Chairman*,
Dr. HAGEL,
Dr. VAFIADES,
Dr. STEKOULIS,
Dr. VITALIS,
Dr. COZZONIS,
Members of the Commission.

On the 8th of March, 1892, another document was issued designating those who were to go to the several places where it had been decided to establish lazarettos, and immediate action was again urged, "considering the urgent necessity for the prompt reorganization of our quarantine establishments," and to this end it was decided to send to each place a commission composed of "a physician to be designated by the superior council of health, an architect engineer, and a navigator." The commission appointed to go "to Syria, Tripoli, and the Red Sea was the inspector-general, Dr. Cazzonis-Effendi." For the Persian Gulf there was appointed Dr. Lubicz, sanitary inspector of Bagdad, and there was added to the commission the vice-president of the council of health, Dr. Hadji-Arif-Bey, together with an officer of construction, to be appointed by the minister of war, and an officer of the marines.

This report says further that "they express the wish that Dr. Duca, their sanitary delegate in Egypt, may be added to the commission, because of his familiarity with the locality of Camaran and vicinity, where he had been stationed for several years, because the mission is distant, fatiguing, difficult, and not exempt from dangers." They again call attention to the necessity for a quarantine station in Syria, by reason of the probable near approach of cholera, which had scarcely ceased in Damas and Beyreut, and because of the close intercourse between these places and the capital; and they ask for the appointment of Dr. Vitalis-Effendi, inspector of the sanitary service, assisted by an engineer architect and marine officer, to go to the coast of Syria and Tripoli to make the necessary investigations and plans, which were to be submitted to the inspection of Dr. Hadji-Arif-Bey when he should return from the Red Sea. Bassorah and the Persian Gulf were to be left to the inspection of Dr. Lubicz with the other officials.

REPORT OF THE COUNCIL OF MINISTERS UPON THE SANITARY AND HYGIENIC MEASURES TO BE TAKEN AT THE HEDJAZ.

(*Translation.*)

[Submitted to the superior council of health at its session of the 25th of March, 1892.]

Following the instructions sanctioned by the Imperial order and communicated to all the villages upon the subject of the sanitary measures to be taken to prevent the reappearance of cholera, the villayet of Hedjaz has instituted a commission to put into execution these instructions. This commission has presented a report, followed by a manifesto from the council of administration of the villayet. The minister of the interior, having had an understanding upon this subject with the imperial department of health, has addressed to His Excellency the Grand Vizier a report, accompanied by all the documents in the case. Following this report, which had been read in the council of ministers, was the request to raise to 156,000 piasters (about $8,000), the annual appropriation of 64,000 piasters made for the service of the public health at Mecca, and at Medina during the epoch of the pilgrimage; also to grant a credit of 700 pounds at one time for the purpose of buying some refuse carts, to be drawn by three mules, and to employ three sweepers for each quarter of the city, to remove the filth from the streets of Mecca.

To send 1,000 tents, 700 for Mecca and Medina and 300 for the pilgrims coming by sea who may be subjected to quarantine.

To send without delay six physicians and three pharmacists, who should be employed provisionally in the city of Mecca during the epoch of the pilgrimage, and to name with a permanent title a physician at Medina, and to pay their salaries.

To allow a salary of 1,500 piasters to the president and secretary of the commission of public health to be instituted at Mecca.

To delay until later the work of canalization at Medina, which should necessitate an expenditure of 1,200 pounds; also to delay the construction of 50 barracks at Medina during the epoch of the pilgrimage, the construction of which would require the amount of 4,000 pounds.

For those having the authority to do so, after having consulted the commission of public health, to proceed with the plans for the canalization of the drains at Mecca.

The council, having deliberated upon these propositions, has decided that by reason of the necessity of putting into execution of the above-mentioned instructions there will be prepared immediately the necessary medicaments. As the city of Medina is provided with a city physician the seven physicians requested for the epoch of the pilgrimage should be chosen from the military physicians, four from the seraskerat, two from the admiralty, and one from the grand commander of artillery. In the same manner the pharmacists should be furnished by these departments. All these officials will be paid, above and beyond their salaries, a sum equal to their salaries, also their traveling expenses.

To avoid useless expense these physicians and pharmacists must be sent by the vessel which transports the rations to the Seventh army corps. In addition, the council has decided to add to the annual credit for the service of public health at Mecca and Medina, the 92,000 piasters requested. As to the credit of £700 asked for the purchase of carts, etc., and the salaries to be allowed to the president and secretary of the commission of public health, the council decides that these expenses can be provided for locally. Finally, as regards the expense of canalization and of the purchase of tents, Col. Nouri-Bey having been consulted, is of the opinion that the pilgrims are always furnished with tents, and in consequence the tents can always be procured by renting them in case of need and indemnifying the owners when they are destroyed by fire. If, on the contrary, new tents are purchased, their cost will necessarily exceed the rent, and they will serve but one year.

As to the canalization of the place Dr. Nouri-Bey has expressed the opinion that it is impossible, in view of the configuration of the land, and that it is necessary to be content with the local use of cesspools, employing in some neighborhoods carts for cleaning the customary ditches. The council, taking into consideration the advice of Dr. Nouri-Bey, has decided not to purchase tents and to request the minister of the interior to do whatever may be necessary concerning the subject of canalization after having an understanding with the authorities of the villayet.

The above decisions of the council of ministers having been sanctioned by imperial order, the order of His Excellency the Grand Vizier, dated February 17, V. S., commands that the seraskerat, the ministers of the interior, marine, and finances, the sanitary department, and the grand master of artillery will do that which is necessary to conform with its decisions.

REPORT OF DR. STEKOULIS RELATIVE TO THE ESTABLISHMENT OF THE LAZARETTO AT SINOPE.

(*Translation.*)

[Presented to the superior council of health at its meeting July 19, 1892.]

GENTLEMEN: According to the decision of the superior council of health at its meeting of July 8, which was sanctioned by Imperial order, the mission appointed to visit the lazaretto of Sinope started immediately for that place. It was composed of Dr. Ibrahim Pascha, Drs. Nouri-Bey and Stekoulis, and Dr. Jerony Makis, sanitary physician, and other officials.

They had in view the inspection of the port of Sinope with the object of establishing there a provisionary lazaretto to receive those travelers who might be subjected to rigorous quarantine at that port.

They found upon examination a peninsula extending a considerable distance into the Black Sea, its extreme point being from 600 to 900 feet above the sea level; the locality was considered by them in every way suitable for the purpose of a quarantine station capable of containing 1,000 people; they set forth in detail the advantages of the place and began the erection of barracks, which were 30 feet long, 21 feet wide, and 10 feet high, situated 300 feet apart, each to contain from 50 to 60 persons; also the construction of two hospitals, the size of the buildings so adjusted as to give to each person 3 square meters apiece. To begin with, they decided to build 12 barracks where they could lodge between 300 and 400 people, and established two camps for the choleraic, the balance being for suspected or noninfected people.

The rapidity with which this quarantine station was put in order is explained by the commission to be due to the fact that all the materials and workmen necessary to build it were furnished by the local authorities of Sinope by Imperial order. Having erected the barracks they called upon the superior council of health to organize it and supply the place with all the necessary materials for its equipment. At the date of our visit the lazaretto was not completed, the reason being that there were no funds to put it in proper order.

NOTE.—Sinope is on the south shore of the Black Sea, situated about half way between the eastern and western extremities, and is the nearest fine seaport to Erzerum; it possesses a good bay and is one of the stopping places for coasting vessels on the south shore of the Black Sea and is used at present as a quarantine establishment for people coming from that part of Persia. It is considered supplementary to the quarantine station at Cavak, which is located where the Bosporus enters the Black Sea but a few miles from the city of Constantinople, and which the superior council of health have so frequently condemned.

HYGIENIC MEASURES PROPOSED BY THE MEDICAL CIVIL COUNCIL FOR THE PURPOSE OF PRESERVING THE CAPITAL AND THE PROVINCES OF THE EMPIRE FROM THE PRESENT CHOLERA EPIDEMIC, AND SANCTIONED BY IMPERIAL ORDER.

(*Translation.*)

The medical civil council, preoccupied by the danger which menaces the capital and the Empire in general on account of the present cholera epidemic (1892), and conscious of the importance of the duty which is imposed upon it by regulations, hasten to submit to the superior authority a succinct account of the hygienic measures necessary to be put into execution to preserve the capital, as well as the other parts of the Empire, from the murderous epidemic.

When a country finds itself menaced by a contagious malady of foreign origin prevailing in its vicinity the first subject of immediate importance is to take counsel as to the most suitable measures for preventing the invasion of the country by this malady; afterwards, in case that it is impossible to prevent its introduction, efforts should be made to lessen its ravages and to hasten its extinction.

The first step, comprising the prophylactic measures, is the following:

To apply the quarantine measures immediately in a manner rigorously exact and serious, in order to prevent the introduction of the malady by means of persons or effects carrying the disease germs.

Thus, there should be submitted to quarantine measures, not only the travelers from the countries where the epidemic exists in full activity, but also the travelers from countries newly contaminated or suspected.

We believe it superfluous to enlarge upon the necessity or upon the efficiency of the quarantine measures relating to pestilential maladies, and to cholera in particular. It is a fact generally proved and admitted, and there is no need to demonstrate it. The numerous examples of the countries which by sanitary isolation, persistently and rigorously maintained, and by a strict and absolute observation of the quarantine measures, have succeeded in preserving themselves, more than once even, from the epidemics which have ravaged the greater part of the neighboring countries, have long since proved the preservative powers of quarantine measures. It remains, then, for the superior authority to take the necessary measures which are imposed upon it by the circumstances.

Afterwards efforts should be made by certain health measures and hygienic police regulations to place the country in such a condition of salubrity that the disease can not find propitious soil for its extension, in case that it is impossible to prevent its introduction.

The health measures and the sanitary or hygienic police regulations necessary at all times are of extreme urgency at a time when an epidemic is imminent.

First. Streets and highways: It should be seen that all the streets, without any exception, are in perfect condition of cleanliness; that they do not contain either animal or vegetable detritus, the mass of detritus and filth of all sorts with which our streets are ordinarily littered, and which is met with at each step in all the streets, even in the principal arteries and public places, and especially in the outskirts and the little streets. This mass of filth should be made to disappear from the city and taken far from it.

It should be strictly forbidden to throw into the streets the refuse from places of industry or from kitchens, for this can but be prejudicial to public health at all times, because of the decomposition of the detritus and the poisonous gases which emanate from it. It is above all very pernicious in time of epidemic. A police inspection and oversight both severe and rigorous should be established to watch this matter, and infractions should be severely and immediately punished.

Special care should be taken to see that carrion thrown into the sea is not left in proximity to inhabited places.

We should remark here that the measures taken to cleanse the highways should be rigorously applied to all streets, absolutely without exception, for if the regulations are applied exclusively to some streets and we are content with putting in a sanitary condition and maintaining in cleanliness only the principal arteries and the most frequented streets, and neglect the quarters but little frequented, the little streets and alleys, lands idle and not inclosed, vegetable gardens scattered through the city, etc., we arrive at no satisfactory result. These neglected quarters will form in time of epidemic by their bad hygienic conditions so many pestilential centers, which will contaminate the others, and from which the evil would radiate in all directions.

It is then essential that the application of the sanitary measures, as much in that which regards the highway as in that which will be indicated later, should be extended to all points of the city, and that there should be no exception.

Second. The gutters and latrines: The subject of the gutters and latrines is one of the most important connected with the public hygiene and the salubrity of cities. The cleanly condition of the gutters, the water-closets, and the general places of deposit of night soil is one of the principal means necessary to preserve the health of the locality and of the human habitation. It is hardly necessary to state that in our city the gutters and latrines do not show the most necessary or even the most elementary conditions of good construction or maintenance; but that in more than one part of the capital, and in the greater part of the other cities of the Empire, the gutter is open to the sky and is part of the street itself. Have we need to cite the notorious gutters of Cassim-Pasha, of Balata, the Rue Araba-Djilar de Haskeui, and so many others? This state of things to which the council has long since called the attention of the superior authority is very prejudicial to public health, and constitutes a very great danger during the epidemic of a malady, which is propagated principally by the alvine dejections.

The Imperial Government has perfectly comprehended it, and the orders given personally by his Imperial Majesty for the vaulting of the gutter of Cassim-Pasha prove in an unquestionable manner that the chief of state and his Government have taken a resolution to remedy this evil. We wish, however, to recall to the superior authority the fact that the gutter Cassim-Pasha, near the Imperial residence, though being the principal gutter offering these antihygienic conditions, is not the only one.

Further, we desire to call the attention of the superior authority to the matter of the cleansing of gutters. If there are gutters which need cleansing we should proceed to this cleansing in the shortest possible time, and before the least cholera manifestation occurs, and without omitting even the most minute precautions of disinfection, for in case the disease should be introduced into the capital it would be the greatest imprudence to uncover the gutters in order to cleanse them. This would contribute to the development of the malady.

We desire to call the attention of those in authority to the excessively pernicious condition of the public latrines and urinals in our city. It is urgent that these places should be put and kept in good condition.

We would suggest that among the means recommended for the disinfection of private and public water-closets the sulphate of iron, sulphate of copper, chloride of lime, lime itself, phenic acid, coal tar, powdered charcoal, sulphuric acid of commerce, largely diluted, are all useful.

Third. Khans, barracks, hospitals, prisons, schools, and other habitations of this sort, should be purified and disinfected. Maintaining the cleanliness and ventilation of these establishments is very necessary and worthy of the solicitude of all those in authority. Those buildings which are overcrowded by persons who are very negligent in all that relates to the most elementary principles of hygiene form or can form so many pestilential centers from which a contagious malady may radiate to the environs. We can cite many examples in support of that which we have just said. It is then indispensable and urgent that the buildings of this category, the barracks, the hospitals, the khans, the hotels, the odas of the Bekiars, the habitations of the emigrants, and of the Jews (especially those of Haskeui, of Ortakeuy, of Balata, of Coujgoundjouk) should be watched very carefully by the authorities. We believe that it will be very useful to the general health that the officials charged by the Imperial Government with watching over the public salubrity should watch also in a general manner over the hygienic conditions of those establishments without its being considered as an intrusion upon the functions of the military authorities, or others upon which these establishments may depend, for the bad condition of any one of them, as we have already indicated, may influence in a pernicious manner the general health.

Further, crowding people together constitutes an incontestable cause of maladies during the summer. We therefore propose that the Government should order the promulgation of the vacations of all the educational establishments. As to private habitations, the authorities should exact that they maintain good conditions of cleanliness and disinfection. It can easily recommend to their inhabitants, by means of the municipal authorities, the care required to maintain good hygienic conditions.

Fourth. Abattoirs and butcher shops: The cleanliness of these establishments ranks among the most essential to maintain the health of the city, and should be closely watched. The authorities should demand that they be kept in good hygienic condition.

Fifth. Cemeteries and burials: We would call the attention of the superior authorities in a general manner to the subject of cemeteries located in the neighborhood of habitations It is particularly urgent that the authorities should prevent burial in these cemeteries and that they demand that in the other places of burial the grave should be sufficiently deep.

Sixth. Special establishments: We combine under this title the depots of rags, of horn, of bone, of skins the tanneries, etc., which in ordinary times constitute a neighborhood very unhealthful for the quarters in which they are placed, and which in times of epidemic become incontestably pestilential centers, very powerful and very dangerous. From the time, then, that there is fear of a cholera epidemic the authorities should immediately have them transported as far as possible from the city. Among this class of establishments we would place the manufactories of butter, of which the number is rather large at Constantinople, and especially at Makrikeuy, at Kassim-Pacha, at Yag-Kappan, and elsewhere, which follow the business of making by nameless mixtures the so-called "butter of Siberia." These manufactories, which slowly poison the unfortunate public by their abominable products, may in time of epidemic become so many pestilential centers. As to the manufactories from which the emanations are not deleterious, as, for instance, the manufactories of spirituous liquors, the authorities should watch that they are maintained in a state of satisfactory cleanliness.

Seventh. Restaurants: Public kitchens, patsadjis, skembedjis, and taverns. These establishments should be watched closely and constantly, because their proprietors, seeking exclusively their own pecuniary interest and not at all the health of their customers, neglect the most elementary principles of alimentary hygiene. Some by ignorance; others by the desire for gain. Some because of the bad quality of the food prepared by these restaurateurs, or it may be by the bad condition of the utensils in use, which are dirty and not tin lined. Food prepared or cooked for several days, etc., often provokes derangements of the digestive organs, which in time of the cholera epidemic can easily become serious. These establishments should be, then, closely and incessantly watched. An oversight should be exercised in a special manner over the Bakals, of which the alimentary preparations are in general of very bad quality. It is desirable that these working people should be forbidden from preparing food, or at least the preparations and the utensils should be very rigorously watched.

Eighth. Alimentary commodities: The oversight of public alimentation, the search for and the repression of adulterations of all sorts, is one of the principal duties of the authorities. This oversight which is necessary, or rather indispensable, at all times, becomes a condition sine qua non in a time of epidemic, and above all, in a choleraic epidemic. We ought, then, to watch closely and in a very rigorous manner the different materials composing public alimentation. We should exact that they be of good quality, pure, fresh, and free from all adulteration. Such are meat, fish, milk, eggs, bread, and other important materials; all the products of the sea, vegetables, and fruit. The sale and use of some others should be absolutely forbidden. Such are preparations of pork, badly preserved and badly prepared; also the indigestible preparation known as oun helvassi, and other preparations constituting almost all the sole nourishment of the lower classes, and which by the great heat do not fail to produce diarrhea, which is much to be feared during a cholera epidemic. Mussels should be absolutely forbidden in time of cholera, as well as certain salted and badly preserved fish. Green fruits, unripe or overripe, spoiled or rotten, should be destroyed.

The moderate use of fruits and vegetables, well preserved, ripe, of good quality, and not spoiled, is not in the least harmful in time of cholera. They are in nowise capable by themselves of producing a case of cholera, and still less an epidemic. It is the abuse of fruits and vegetables or the use of unripe fruits or those spoiled and rotten which produce derangements of the digestive organs very dangerous in a choleraic epidemic.

Before closing we would call the attention of the superior authorities in a special manner to the subject of drinkable water. The use as a drink of water of bad quality, like that which is served to the greater part of the inhabitants of Constantinople, engenders a crowd of maladies extremely prejudicial to the public health, and becomes in time of epidemic one of the indirect and predisposing causes of choleraic attacks.

These are the principal measures which, if applied in a vigorous and sincere manner, render a locality salubrious at all times and contribute very efficaciously to preserve it from an epidemic. In case of imminent danger these measures, added to the quarantine, are the base of the defense of a country menaced by a choleraic epidemic, and form a group of preventive measures by means of which we can keep the evil at a distance. As to those of which we should make use in case that we can not succeed in preventing the introduction of the disease, the council should not fail to present to the superior authorities at the proper time the programme of measures to be taken and the hygienic prescriptions necessary to protect the public against the evil.

CONCERNING QUARANTINE REGULATIONS.

From the Turkish documents obtained from the officials in Constantinople it is shown that as far back as 1865 the most stringent regulations were prescribed concerning quarantine against vessels and people coming from infected countries, and these regulations have been amended and renewed from time to time as science has pointed out the methods of improvement. The health officials said that the difficulty has been to get the regulations carried into practical working effect. The quarantine regulations of 1865 would be considered severe even now, but they have failed to protect the country from the invasion of the disease, not because the proposed methods were ineffective, but because they could not be made practical for lack of money. At the best managed station, supplied with many modern appliances, as, for instance, that of Clazomenes, near Smyrna, the methods in use, which are considered effective by the Turkish officials, would not be tolerated for a day at any quarantine station upon our coasts. We were informed that at Camaran, which is perhaps the most prominent station in the Turkish dominion, they are not prepared to carry out the quarantine regulations, and the work is not so well done as at Clazomenes. At Cavak it is no better; the appliances are inadequate and the quarantine force much too small to properly attend to the work which comes to these stations.

The quarantine regulations of the Ottoman Empire for 1867, article 12, prescribe "that all old clothes and rags coming as merchandise on any ship from cholera-infected countries shall be submitted to rigorous inspection and shall be destroyed by fire if it is judged necessary; that all stuffs which have been used or in use, wools not washed, old cottons, hair, feathers, skins not manufactured, and other débris of animals in a foul state, and which are considered susceptible merchandise, must be submitted to the usual means of purification." These regulations were reaffirmed by the Government and republished in the quarantine regulations of 1891, article 11. From this it appears that rags and old clothes are sent from India and other choleraic countries even in the time of epidemics and that they come on the same ship with the pilgrims. The regulations speak of rags as being "eminently susceptible of infection" and require them to be made the subject of a special inquiry by the quarantine officials.

MEASUREMENT AND DISINFECTION OF VESSELS.

The rules for the measurement of vessels printed in the Turkish regulations of 1867 are based upon the old English rule of allowing a proportion of two persons to each 3 tons of registered measurement. In 1891, however, the rule was changed, and they are now required to give to each pilgrim at least 9 feet of surface and 54 cubic feet of air space.

The regulations of 1891 require that vessels carrying a small number of pilgrims coming from infected countries shall cause them to disembark at Abou-Saad-Vasta for examination, and, if necessary, detention; but those carrying larger numbers must go direct to the station at Camaran. Abou-Saad-Vasta is a branch of Camaran, where the smaller trading ships doing business along the coast are quarantined; if, however, any vessel has had cholera on board while on the voyage, then she is required to go direct to the quarantine station at Camaran.

The investigations we made, the conversations with sanitary officials, and the documentary evidence presented, lead to but one conclusion: Effective quarantine is not maintained by the Turkish Government.

The people do not demand quarantine; they resent it. Their religious convictions and teachings determine their action. Responsibility for affairs which they now consider beyond individual control is placed upon the Almighty. "God is great." He sends the cholera, and it is not for them to interfere with His decrees; and any device which would restrict their movements to or from the "holy cities" would cause serious disturbances. Upon several occasions the pilgrims have defied quarantine restrictions, lax as they now are, and have revolted against the measures taken to prevent them from accomplishing the one great end in life, the journey to Mecca. An attempt to establish strict quarantine would doubtless result in widespread rebellion against the present Government and might result in its overthrow. The sherifa of Mecca is the ruler of the province of Hedjaz, in which are situated the "holy cities," and he already causes great apprehension to the Sultan because of the influence he exercises over the pilgrims, and he has on more than one occasion defied the orders of the Sultan, who has difficulty even now in maintaining supreme authority over that province; further proscriptive measures would almost certainly precipitate open revolt, especially if the measure was known or suspected to emanate from "Christian dogs." The Sultan may personally desire to have perfect quarantine establishments maintained throughout his dominions, and we were informed by those who have conversed with His Majesty upon this subject, that such is his desire, and that he has repeatedly issued orders to have the work performed; but this has not and will not be done as long as the conditions remain as they are at present.

To wait for the Ottoman Government to do this work is simply to invite epidemic, for their present quarantine service is not much more than show. A chain is no stronger than its weakest link, and in the chain of quarantine stations in the Ottoman Empire every one is a weak link, and under existing conditions it is not to be expected that they will be much improved.

Dr. Shakespeare relates that during a recent pilgrimage a caravan coming to Mecca accompanied by native physicians was stopped at the "Cordon Sanitaire," some miles from the city. The physicians reported to the sanitary officials a state of "perfect health" among the pilgrims, and that no deaths had occurred. They were permitted to pass on and introduced cholera into Mecca, which became epidemic; investigation was made, and upon examining the ground where the caravan had its last camp before they approached the "Cordon Sanitaire," 16 newly made graves were discovered. We have elsewhere reported similar occurrences at the most thoroughly equipped quarantine stations, showing the entire worthlessness of the present methods.

There are a good many lepers in Constantinople. The leprous Mohammedans are restricted to a certain quarter of the city; the others roam about as they please, peddling, vending fruits or sweetmeats. When the disease renders them unable to do anything more they are taken to a large hospital for lepers at Scutari, where they are kept until they die. One of the health officers said that among the medical profession in Constantinople there was a feeling that leprosy is a race disease and does not affect people who are not in some way allied with the particular race affected, and that other races do not contract the disease, although they may be in contact with it. He said the researches here made by competent men tended to confirm this view, a position which is not maintained by scientists elsewhere.

The present epidemic of cholera, which we thoroughly investigated at this point, will be referred to later on.

March 16 we reached Athens. The U. S. consul, Mr. Monatt, informed us that no rags were shipped direct from Greece to the United States, but that they go to England undisinfected. The Greeks are especially averse to vaccination, and smallpox is almost always present; the people do not seem to dread it, although at times it is very severe. There is but little merchandise sent from this place to the United States, and no emigration. There are no disinfecting establishments here. March 19 we reached Corfu and called upon Consular Agent Raymond. From this place the principal exports to the United States are dried fruits, wine, and oil; there is no emigration and no opportunity for disinfection. As at other places in this part of the world, they have smallpox almost continually; it is mainly confined to the poorer classes, who live in narrow, crowded streets, and are filthy in their manner of life; they resist vaccination. The British consul, Mr. Reed, who was present at our interview, and who has been a resident of this place for a long time, reiterated the statements concerning smallpox, and said that there was but little hope of making headway against the disease because of the positive aversion of the people to vaccination. Rags from here go to England.

March 21 we reached Malta and called upon U. S. Consul John Worthington, from whom and the vice and deputy consul, Mr. J. F. Balbi, we obtained the following information: A great many rags are shipped from Malta to England; they are gathered in Malta, Tripoli, Tangiers, and the neighboring coasts; they are baled and sent away without disinfection; there are no means here for the disinfection of rags or other commodities from Tripoli or Tangiers; and on the neighboring coasts, from which rags come in large quantities, smallpox is almost always present, and there are frequent outbreaks of the plague and of a dangerous type of typhus fever, both of which diseases are quite severe in the villages on those coasts at this time, and strict quarantine regulations are now exercised by the Government of Malta against ships which have touched at ports in those countries.

During the recent epidemic of cholera stringent quarantine regulations were enforced by the local government, and, as a consequence, trade in Malta was killed, for the reason that commerce is largely maintained by shipments from Russia, mainly from Odessa. At the present time quarantine regulations are in force against the Russian ports; also from the ports of Tripoli and Tangiers, where the plague and typhus exist. The situation of Malta, lying, as it does, in the direct route for vessels from India and from the Black Sea, renders the island peculiarly liable to infection; hence the anxiety of the Government to maintain strict quarantine whenever serious contagious diseases exist in any country having commercial relations with this place. Upon the island the British Government maintains large hospitals, to which sick soldiers and sailors are sent from India, and the authorities leave nothing undone to prevent the introduction of contagious diseases, especially cholera.

The physicians of Malta, especially those associated in any way with the government of the island, do not entertain the same views with reference to leprosy that are entertained at Constantinople, as the following law, which is rigidly enforced, demonstrates:

FOR CHECKING THE SPREAD OF THE DISEASE COMMONLY KNOWN AS LEPROSY.

Whereas it is expedient to make provisions for checking the spread of the disease commonly known as leprosy, it is hereby enacted and ordained by his excellency the governor, with the advice and consent of the council of government, as follows:

ARTICLE 1. Every physician or surgeon who in the exercise of his profession observes any case of the disease known as leprosy shall within twenty-four hours make a report thereof to the chief medical officer. The same obligation to make the said report lies on the head of the family of any person suffering from the said disease, and in his default on the nearest relative residing in the same house in which the person suffering from such disease dwells, as well as on the person who occupies or has the management of the house or other place in which the patient dwells. In this case, however, the term for making the report referred to in the preceding paragraph is one month, to be reckoned in regard to cases of leprosy existing before the promulgation of this ordinance from the day of such promulgation, and in regard to all other cases from the day on which the said person becomes aware of such disease.

The punishments for any breach of the provisions contained in the preceding paragraph shall be those established for contraventions.

ART. 2. It shall be the duty of the superintendent of police to make to the said medical officer a report of any cases of the disease mentioned in the preceding article of which he may be aware.

ART. 3. If the chief government medical officer, upon the receipt of the report referred to in article 1, be of the opinion that the person therein mentioned is suffering from the said disease he shall immediately communicate such opinion to the governor in writing, and in any such case the head of the Government may by warrant under the hands of the chief secretary to the Government order that such person shall be removed to an asylum for lepers in these islands, to be there detained during the whole period of the disease.

ART. 4. Whoever shall knowingly harbor, or cause to be harbored, any person suffering or suspected to be suffering from leprosy, with intent to conceal such disease, or to prevent the removal of such person to the asylum referred to in the preceding article, shall be liable to the punishments established for contraventions.

ART. 5. Persons detained in the said asylum may be seen by their relations and friends under such regulations as shall be made by the head of the Government.

ART. 6. In the said asylum males shall be separated entirely from females.

ART. 7. Each person detained in the asylum shall be maintained at the expense of the Governmant, saving the right of the Government to be reimbursed by those who are bound according to law to supply maintenance.

The officer in charge of the asylum may, however, allow persons therein detained to provide meals at their own expense.

We were informed that this regulation is rigidly enforced, and that in consequence no cases of leprosy can be seen upon the streets.

The following regulations relative to quarantine are in force at this time:

GOVERNMENT NOTICE.

His excellency, the governor, having heard the opinion of the board of health, has been pleased to direct that Government notice No. 42 of the 4th of March, 1893, is to be modified and that the following regulations are to be observed, viz:

1. Exclusion from the harbor with provision for coaling under such restrictions as may be in each case directed by the collector of customs.

The following shall not be permitted to enter the harbor, but may be allowed to coal and take provisions in strict quarantine, with the least delay, and subject to the orders of the collector of customs; and shall in all cases be ordered after coaling to quit with all dispatch:

(*a*) Vessels with pilgrims from the East.

(*b*) Vessels having cases of cholera on board.

(*c*) Vessels which have had on board a case of diarrhea, cholerine, or any disease with symptoms resembling cholera, either among the passengers or crew.

(*d*) Vessels from North and South America when cases of yellow fever have occurred on board during the voyage.

(*e*) Vessels arriving from Arabian ports in the Red Sea which have not been admitted to free pratique at Suez and Port Said.

2. Quarantine for fourteen days:

Vessels arriving from the villayet of Tripoli shall not be admitted to pratique in these islands unless fourteen days have elapsed from the date of their departure.

3. Quarantine for ten days for provision for handling cargo in quarantine:

(*a*) The following shall be subject to a ten days' quarantine, but shall be permitted, under the directions of the collector of customs, to discharge goods (which are not susceptible of communicating contagion) by means of the vessel's crew on lighters, or to employ, for handling cargo, local laborers under ten days' quarantine, viz: Vessels arriving from any port without a clean bill of health.

4. Medical inspection:

(*a*) All vessels arriving at Malta shall undergo strict medical inspection.

5. Passengers:

(*a*) Passengers arriving by any vessel subject to quarantine are required to undergo the same restrictions as the vessel on which they arrive.

(*b*) Passengers arriving direct from England on vessels having a duly qualified medical officer on board are to be allowed to land without medical inspection, provided that the medical officer in charge on board shall declare on oath that during the voyage there has not been on board a case of dysentery, diarrhea, cholerine, cholera, or any disease with symptoms resembling cholera, either among the passengers or among the crew.

(*c*) The declaration above referred to shall be countersigned by the master of the vessel.

(*d*) No passengers and no members of the crew on board a vessel carrying pilgrims are allowed to land.

6. Susceptible goods:

(*a*) The importation of rags, raw silk, hair, and feathers is prohibited.

(*b*) The importation of soiled wearing apparel before disinfection is prohibited.

(*c*) The importation of vines, vine shoots, vine leaves, or roots from any port of the Mediterranean is prohibited.

(*d*) The importation of grapes, or supports used in the cultivation of vines, vegetable earth, vegetable or mixed manure, is prohibited unless the importation is accompanied by a sworn declaration made by the shipper before the British consular authority of the place of its origin, to the effect that the shipment does not contain vine plants or cuttings, or that its contents come from nurseries, hothouses, fields, or gardens which are 200 yards distant from the nearest vines or vineyards, and that moreover the phylloxera is not known to exist at the place of origin.

(*e*) Provided, however, that the collector of customs may grant permission for the importation of plants and vegetable produce under proper restrictions when application has been made, and the precautions necessary are established, before the shipment leaves the place of origin.

By command.

G. STRICKLAND,
Chief Secretary to Government.

PALACE VALLETTA, *March 10, 1893.*

Another order issued by the governor prohibits the importation of cattle of any kind from Egypt, Naples, Calabria, and Sicily; also of wool, hides, skins, horns, bones, and hoofs from countries where epidemic diseases prevail; that vessels arriving in Malta having live cattle on board must subject the cattle to inspection in the "Bovile." It also prohibits the importation of cattle from the Black Sea or Sea of Azov, and that all cattle landed must be subjected to a quarantine for a period of fifteen days, and swine arriving from Albania and Greece shall be subjected to a twenty days' quarantine. Dogs are subjected to three months' quarantine.

There are no cases of cholera in Malta, but a few occurred on vessels which were quarantined.

March 22, we reached Palermo, where we learned that the U. S. consul left the city the day before on account of illness. The vice and deputy consul, Carmino G. Lagano, gave us the information we desired. No rags were sent from Palermo to the United States; they are sent to England. He said there was not much emigration from Palermo, and there is no adequate means to disinfect baggage. The trunks and boxes of emigrants are put in the hold of vessels and fumigated with sulphur, but the packages are not opened; he informed us that emigrant ships sailed from Palermo to the United States October 4 and 8, November 14, and December 2. No examination is made of the emigrants because "it would have to be repeated at Naples, and for this reason it is not done here." He said that on February 4, 1893, some goods were sent here from Marseilles for shipment to America; they were hides, hair, and wool; he did not know their point of origin, but they were disinfected in the ship's hold and sent to New York. There were no vessels in port bound for the United States during our visit.

The following is the form of certificate issued from this consulate:

STEAMSHIP MONTEBELLO, CONSULATE OF THE UNITED STATES,
Palermo, Italy, October 8, 1892.

I hereby certify that the personal effects and baggage of the steerage passengers of the Navigazione Generale Italiano, steamer *Montebello*, sailing from this port for New Orleans had been at their suggestion fumigated with sulphur for a period of six hours, and thereafter it has been unpacked and freely exposed and disinfected by exposure to steam for one hour, the steam being of a temperature of 100°.

I further certify that I find upon investigation that there are no steerage passengers from any infected district upon said steamer, and that said passengers have not been in contact with any person infected, or from the infected localities of Europe.

Given under my hand and the seal of this consulate the day and year above written.

CARMILO G. LAGANO,
Vice-Consul.

Mr. Lagano informed us that all emigrants from Palermo come from the interior of Sicily, where they know there is no cholera, and therefore certify as above. Said he: "The trunks are opened and the baggage placed upon the edge while being fumigated in the hold. The Italian Government will not procure a building for disinfection because it can be better done in the United States, and they do not care to do it here." We requested to be taken to the steam disinfecting appatus, when it transpired that there is no such thing here. Mr. Lagano, the vice and deputy consul of the United States, is the son of one of the principal owners of the Florio Rubatino Steamship Line, and is also the agent of the Phelps Steamship Company at Palermo. Mr. Lagano said "that at this date no emigrants go from here because of the strict regulations in the United States, which make them much trouble, and the disinfection spoils their clothing." In answer to our questions he said: "Emigrants may take passage from Palermo for either Naples or Messina, and then keep on to the United States and thus avoid disinfection or inspection, and this is done; but there is no way to avoid it, because baggage put on board, supposed to be destined to a local port, is not disinfected, and once on shipboard the emigrant may keep on to New York." Being questioned further in relation to rags, Mr. Lagano said: "There are some rags which go from here to the United States, but they are all disinfected according to the regulations of the Treasury Department." We requested him to take us to the disinfecting chamber, when he replied: "Oh, the rags are disinfected in the hold of the vessel which takes them." He then said: "Many rags go from Naples to England and some go from here; they are dirty things, and in my judgment the best thing to do with them is to burn them, for I believe they carry disease."

Mr. Lagano notified the agents of the steamship companies doing business at Palmero, by printed circular, dated the 14th and 16th of September, 1892, that baggage and effects of persons from Europe would not be admitted into any port of the United States without first being submitted to disinfection in accordance with the regulations of the Treasury Department. The usual bill of health is issued by the consul, who certifies "that good health appears to be enjoyed in this town and the adjacent country, and that there does not appear to be any suspicion of cholera or plague or contagious distemper therein."

March 25, 1893, we arrived at Naples. While going on shore from the steamer we saw a steamship with the United States flag at the fore, with many people on deck. Believing it to be an emigrant vessel bound for the United States, we went at once to our consul, Mr. J. M. Twells, and there learned that it was the steamship *Chandernager*, of the French Line, and was to sail to-day. (At the consul's office Dr. Irwin, who up to this time had been with me, found a cablegram from Surgeon-General Wyman, directing him to proceed at once to Marseilles, France. A steamer in port bound for Marseilles was just then ready to sail, and Dr. Irwin took passage, leaving me to pursue the itinerary previously arranged.)

Accompanied by Consul Twells, we went on board the *Chandernager* at 10:30 a. m. and found she was to sail at 6 o'clock, taking out 1,140 steerage passengers, most of whom were then on board. There was a commission of the Italian Government on board, consisting of the captain of the port, the surgeon of the port, and an officer of the police. We were informed that the two first officials were appointed respectively by the minister of the marine and the minister of the interior; with them was the ship's surgeon. With Consul Twells we inspected the entire vessel, finding the steerage accommodations very poor, the space allotted to each person being entirely inadequate; a large person could not lie in the common wooden bunk without his sides being in contact with the boards. We were told that the vessel was originally a troop ship, and was afterwards arranged to carry emigrants; the scanty arrangements for ventilating between decks were pointed out to the officials as inadequate, and not in accordance with the standard required by the U. S. Government. With the number of people on board, if the hatches were closed, the air must inevitably become extremely foul.

There were no hospital accommodations. When we asked to see these quarters we were shown a small room which had been partitioned off the steerage. There were no special accommodations for the sick people, except that the bunks are a trifle more roomy.

The water-closets (if such they can be called) were disgustingly filthy. There is no pan or hopper. The whole arrangement consists of a wooden trough without even a board to sit upon; the persons using it are compelled to squat on a shelf, balancing themselves as best they may, having nothing to take hold of for support. At the time of our visit the trough was half filled with excrement; no water passed through the trough to carry it away, and the stench was sickening. Immediately adjacent, divided from the "water-closet" by a thin board partition, was the ship's bakery, where we saw bakers kneading bread. The cracks in the board partition were wide enough to enable one to see what was going on in either place. In a corner near by there was a pile of garbage thrown on the deck, three or four barrels full, consisting of offal from the cook's galley; this quarter of the vessel was in the most filthy condition. The officers' water-closet on deck, into which we went, was but little better, the apparatus being out of order and extremely filthy. The whole condition seemed to be the usual state of affairs, for the ship's crew were on board lounging about and disengaged. We were told that the baggage had already been fumigated in the ship's hold; but we saw several large boat loads of baggage come on board from the shore, and it was at once lowered into the hold. As there was no place on shore to disinfect the baggage it was evident that quite a proportion of it had not been disinfected even externally.

We remained on board during the inspection of all the emigrants, notwithstanding we were politely requested to retire to the cabin because of the "high wind and fear of rain," but we remained during the inspection, which lasted until 6:30 p. m. The whole "inspection" was a pretense from beginning to end; apparently the only examination was to find whether each person had a vaccine scar, and any mark on the arm between shoulder and wrist was accepted as such and the person passed; when no mark could be found the passenger was vaccinated by the ship's surgeon. As each emigrant approached the surgeon he was required to remove his head covering, and his head was glanced at. We saw one young man told to stand aside because he had alopecia, which he said was the result of a fever, and one man stood aside because he had chronic eczema.

Men with cataracts, with one eye, with corneal opacities, with exophthalmic goitre, syphilitic nodes, tumor of the neck, abscesses on various parts of the body, persons of very old age, some apparently idiotic, being led by more fortunate members of the family, all were passed and permitted to go on. They were a wretchedly abject and poverty-stricken lot of people, with hardly a whole suit of clothes among the entire number. The women, 40 in number, were better dressed and much more respectable in appearance. Among the emigrants we found several who had previously been in America, and who were apparently managing the other emigrants. They could be easily picked out because of their impertinent manner toward the officers of the vessel and to all others with whom they came in contact. Mr. Wickersham, our vice and deputy consul, who was with us, and whose long residence in Italy enables him to speak the language fluently, acted as our interpreter, and we spent nearly the entire time in seeking information among the emigrants. Of the large number whom we requested to sign their names in a book which we had for the purpose, there were but three who were able to do so. In response to the question where they were going, all replied, "to Mulberry street, New York." Most of them said they had relatives living there; some of them said they were going to work on farms which they had been told were located on Mulberry street, New York. They appeared to believe that Mulberry street was some place located in the interior, but where they had no idea, saying that they would be told where to go when they reached New York. Notwithstanding that every passenger had a passport which was scrutinized by the police official on board, and which, according to the law of Italy, is granted to the applicant by the Italian Government only upon a certificate issued to each person by the mayor of the community in which he has lived, which certificate says among other things that the bearer is personally known to the mayor and there is nothing against his character; and on the back of each passport there is printed in the Italian language an extract from the United States laws which provides that no person shall be admitted into the United States who has ever been convicted of a felony, etc. Notwithstanding these facts, there was a squad of policemen sent from police headquarters of the city to arrest and return those who were endeavoring to escape from the country who had committed crimes with which they had been charged, but not yet tried. Three such persons were arrested and removed in our presence, but each had the passport duly signed.

The whole inspection as conducted at this place it worthless; it does not in any way conform with either the spirit or letter of the United States law, and the emigrants on this ship are not such as would be welcome in any community within the United States.

The baggage is not disinfected, and no attention is paid to the proper sanitation of the vessel.

In view of the facts observed, we requested our consul, Mr. Twells, to call a meeting of all the steamship agents located in Naples to meet at his, the consul's, office on the 29th instant.

March 27, with Consul Twells and Vice-Consul Wickersham, we inspected the North German Lloyd steamship *Kronprinz Frederick Wilhelm.*

The sanitary condition of the vessel was excellent; there was good ventilation; the passengers had slept on board all night and our visit was made at an early hour in the morning before the ports were opened, so that we had an excellent opportunity for judging of the ventilation. There were 700 steerage passengers, generally of a better class than those we had inspected on Saturday. This was said to be due to the fact that the charge for tickets on this line of steamships is 20 francs more than on the French line. The berths are larger and more comfortable, and the whole ship was more roomy; the water-closets had the regulation pans, and a stream of water constantly flowing through them; the sanitary condition of the vessel was beyond criticism. The examination of the emigrants, however, was the same as we have described, and is without value. There was the same rapid look for a vaccine or any other scar on the arm, and a glance at the head for baldness. The blind in one eye, crippled, and diseased, some apparently feeble-minded, were all passed. We made repeated efforts to ascertain whether the emigrants could read or write, and although they appeared to be more intelligent than the last examined, more than half of those could neither read nor write.

The closest inspection was made by the police officials to detect deserters from the army and escaping criminals, of which there were several; all had the usual passport. Baggage was brought on board which had not been disinfected, although we were told all baggage had been fumigated in the hold. While standing on deck we saw two lighters come alongside loaded with baggage brought from the shore, which was taken on board and immediately lowered into the hold. We asked where the baggage came from, but no one knew. Each passenger was provided with a passport which had been obtained upon the certificate made by the mayor of his commune that the bearer was free from any criminal charge, and no reason was known why he could not emigrate.

March 28, in company with our consular officers, we inspected the steamship *Massilia* of the Fabre Line. Upon going on board, the hatches were opened and we were told that the steerage had been fumigated with sulphur for six hours. There were no checks, however, to determine how long the hold had been fumigated; there were a number of lighters alongside, waiting to unload fruits, macaroni, and baggage, which indicated that the shippers ashore had not been informed that they would have to wait before loading the cargo. When the hatches were raised there were not sufficient fumes to prevent looking into the lower hold, where there was some freight, and into which that alongside was immediately placed, of course undisinfected. The *Massilia* has on her deck a disinfecting apparatus in which small parcels of clothing or bedding may be steamed, and which is intended for use in the event of a contagious disease appearing while the vessel is en route.

The vessel was cleanly throughout, the bunks roomy, and space between decks fairly good; hospital accommodations fair, but they might be improved. There were on board 1,100 emigrants and the examination was the same as heretofore described. We detected one woman with three children, each of whom had tinea capitis and whom we had seen removed from the *Chandernager* because of this disease. She said she was going to join her husband in America. We were desirous of ascertaining how she came on board the *Massilia*, having been so recently removed from the other vessel; her appearance and that of her children indicated extreme poverty, and we did not think it probable that she had purchased new tickets for this line. She soon came forward with her children for examination, and the ship's surgeon refused to pass her; whereupon a lively discussion took place between the surgeon, the agent who sold the tickets, and the Italian officials. Our interpreter informed us that the subagent was insisting that the woman should be permitted to proceed, and for a time it appeared as though his will would dominate the action of the examining board; but after a full half hour's debate, the woman was removed by the agent to some other part of the ship and we saw her no more. On going ashore, however, we made inquiry as to whether the woman with the three children had been taken off the ship, and we were told that she had not.

This circumstance indicates that tickets sold for one line of steamships will be received by other lines. On this ship the subagents who brought groups of passengers with them were quite numerous, moving freely about among the passengers, giving them instructions and going behind the official railings intended to keep back all who had no business at the table. They entered freely into conversation with the port physician and police inspector concerning the passengers. Every appearance indicated that they exerted considerable influence in securing passage through the official barriers for the intending emigrants. The medical examination on this ship did not differ from that observed on the others, and can only be characterized as of no value. We talked with some lads who said they were going to New York City where they were to be engaged as bootblacks. They had already been informed that the places awaited their arrival, but they could not or would not mention the name of the party who had sent for them to come. They were from 14 to 16 years of age and were bright-looking boys, although they could neither read nor write. Many of the emigrants were clad in rags; the men in drawers with no trousers, and they were generally a poverty-stricken set. There were several among them who had previously been to America and we learned that they were engaged in "coaching" those over whom they had oversight, directing them especially to keep away from the Americans, meaning our party, and to answer none of our questions.

One man came up with a passport in his hand, assuming that I was one of the officials to whom it should be presented for inspection. I took the passport, then asked his name. He tried then to get his passport back, saying he wanted to see it a moment. Not being able to look at it he could not give us his name, and he did not do so until after the passport had been opened and he had read the name on the inside. Then he replied very promptly.

As passports are of no use to persons who desire to become citizens of the United States it would be a matter of precaution to ask for this document when each emigrant lands, and the commissioner of immigration should be authorized to stamp in large red letters across the face of the passport the word "canceled." This would prevent the document from being returned and made to do duty a second time, a practice which is not uncommon.

The baggage came on with many of the emigrants, so that it was self-evident that it had not been disinfected or fumigated, as there are no appliances for doing so on the shore. These facts obtained here indicate the falsity of the statements made at Palermo, that baggage was disinfected before going on shipboard. As a matter of fact there is no disinfection of baggage here or in Palermo, and the fumigation of the ship's hold, which is not done in a proper manner, is completed before the baggage of the emigrant comes on board. In view of the facts the following cablegram was sent to the Surgeon-General of the Marine-Hospital Service March 28, 1893: "Large number of emigrants preparing for America. Arrangement for fumigation or disinfection of baggage inadequate. Condition of affairs demands appointment of medical examiner to supervise disinfection. This is a matter of great importance."

March 29 we held a conference at the office of the U. S. consul with the representatives of the steamship lines. There were present U. S. Consul Twells, Vice-Consul Robert O'Neill Wickersham, and Sig. Luigi Balsamo, representing the French National Line; Mr. Edward Holme, the Anchor Line; Sig. Vincenzo De Luca, the Fabre Line; Mr. Frederick Stolte and Mr. Aselmyer, the North German Lloyd; Sigs. Angelo Orlandi and G. Orzi, the Italian General Navigation Company and Florio Rubattino Line. The object of the meeting was stated to be the consideration of the law recently passed by the U. S. Congress regulating quarantine matters. The law was read section by section and opportunity was given for any person to ask questions relative to the paragraph read, and it was stated to them that if no questions were asked concerning it it would be assumed that all present understood the points mentioned. The agents present were told that in order to comply with the new law, new methods for disinfecting vessels, their cargoes, and the baggage of emigrants must be put into practice; that for the present it must be done under the direction of the consul, or someone to be appointed by him, until such time as the medical inspector who had been designated to do this duty at the port of Naples could reach here: that unless all vessels were fumigated in accordance with the regulations prescribed in the act of February 15, 1893, bills of health would be withheld.

Each section of the law and the regulations made in conformity with it were gone over carefully and the subject thoroughly discussed. Numerous questions were asked and answered, so that the matter might be fully understood by the interrogators. As no systematic method of inspection, disinfection, or examination had hitherto been made at this port, there was much ground to go over.

The methods of inspection and disinfection now in use at Bremen, Rotterdam, and Amsterdam were fully discussed, and the conversation showed that all present understood the subject, and each of the steamship agents promised to make the necessary arrangements at once to comply with the United States law. During the conversation it was stated that it would be wise to require the emigrants to reach Naples five days before they expected to sail so that proper examination and disinfection of the baggage might be made without haste. In response one of the gentlemen said that the Italian Government would not permit the emigrants to remain here for five days before sailing, and that they were required upon arrival to go immediately upon the ship, and the Government would not permit any other arrangement. In response to this statement they were informed that the Government of the United States did not wish to interfere in any manner with the laws governing the Italian people, but that for their own protection our people had passed such laws as they believed to be wise, and any person desiring to become a citizen of the United States must be prepared to obey and respect the laws. Therefore, if the intending emigrant could not comply with such regulations as were made by the U. S. Government it would be necessary for them to stay at home, for under no circumstances would a bill of health be issued to any vessel which had not complied with the laws of the United States. It was further stated that it was a matter of impossibility for a proper medical examination of the emigrants to be made in the time now devoted to it, and the officer assigned to duty here would require the time necessary to do it properly. If local regulations did not permit the emigrants to remain in Naples for the length of time required, it would be necessary for the steamship companies to adjust the time of arrival of emigrants so that all might be done in a proper manner without infringement of local laws.

March 30 the ship *California*, of the Anchor Line, was inspected throughout and found to be in good sanitary condition; the bunks were made of new lumber, and it was said that they were renewed each trip. They were clean and comfortable, supplied with a mattress, which they say is destroyed at the end of each voyage. The rooms intended for hospitals were partitioned off the steerage, but there were two rooms situated on deck having six beds in each for treating contagious diseases. The water-closets could be improved, but they were clean; they are, however, insufficient in number for a ship carrying from 1,000 to 1,200 people. The ship was clean, but there was a quantity of old woodwork in the steerage which could have been dispensed with to the advantage of both space and air. We measured one of the compartments for the accommodation of steerage passengers; it was 56 feet long, 38 feet wide, and 8 feet high. In this room there were bunks for 140 persons. There were two ventilating flues in the compartment, but they are smaller than required by the United States regulations to supply this number of people with air. The captain, who accompanied us during the examination, evinced an intelligent interest in the subject of disinfecting the ship, and said that he used lime wash and carbolic acid in the steerage, which had been newly coated with this mixture, the odor being apparent; he said that the hold would be fumigated the next morning. He showed us a room in which there were trunks and personal effects of steerage passengers, which we were told were placed there for the purpose of disinfection by steam, but that none of the packages would be opened. He was told such disinfection was useless and did more harm than good, because the uninformed person would presume that any infected clothing in the boxes had been disinfected and would take no further precautions. The cargo which was being rapidly stored in the hold consisted of oranges, lemons, and macaroni.

Although the ship did not sail until the next afternoon there were a large number of emigrants on board like those already described; they were ragged and dirty. All of them carried huge sacks, bundles, and packages. No attempt had been made to find out where the people came from or whether the baggage had been examined or disinfected. As observed on the other ships, the subagent was on hand giving directions as usual. We were accompanied during a part of the inspection by Mr. Holmes, one of the owners of the line, with whom we had an extended conversation on shipboard relative to the subject talked about at the conference of yesterday and as to the method of carrying out the requirements, which were explained as the ship was inspected. The *California* has an apparatus for supplying drinking water to the passengers, which, while it may be economical, can not be commended from a sanitary standpoint. The drinking water is put into a large cask on deck; an iron pipe extends to near the bottom of the cask, and on the outside of the barrel it has a mouthpiece to which the thirsty mortal goes and sucks the water through the tube. This is the only way that drinking water is furnished and everyone must suck the same tube.

The captain said that during the voyage he covers the floors of the steerage with carbolized sawdust. The bunks and the steerage were clean, but the emigrants are crowded, and there is not sufficient ventilation. On this voyage the vessel took about 1,150, nearly all of them coming from Italy or Sicily.

Soon after reaching Naples we had inquired whether rags were shipped from there, and were told that no rags were shipped from that place. On going ashore and landing at an unusual place we found a large quantity of baled rags ready for shipment to England, to which place we afterwards learned all rags go from this port. Mr. Wickersham, who was with us at this time, stated that he resided at

Naples during the cholera epidemics of 1882, 1883, 1884, and 1885, and that on one day during the epidemic of 1882 the number who died from cholera was 1,800; that the outbreak at that time was traced directly and without doubt to rags which had been brought from Egypt; that in consequence of this fact he had succeeded in stopping the shipment of rags into the United States, and from that time to the present no rags had gone directly from here to the United States. Many Italian rags are sent out of the country to England and elsewhere from the port of Leghorn.

April 3 we reported the condition of affairs at Naples to Surg.-Gen. Wyman, covering the details of the examinations at this point, and, at the request of U. S. Consul Twells, drew the form of a circular, which was posted in his office, concerning methods of disinfection, etc., which was as follows:

"Before emigrants are permitted to go on shipboard the vessel must be mechanically clean in every part. No chips, sawdust, straw, loose packing material of any name or description can remain in hold or steerage.

"When mechanically clean the hold and steerage will be disinfected by one of the methods named in the Treasury regulations; this must be done by the U. S. consul, or under his direction, the expense to be charged to the ship. When sulphur fumes are used the hatches must be closed down and sealed and remain closed six hours; the steerage and hold will be measured and the sulphur weighed and ignited under the direction of the consul.

"All emigrants' baggage, if from suspected ports, must be fumigated before stowing away; bundles, boxes, trunks, and all packages or sacks must be opened, the contents removed and spread out on racks, there to remain in sulphur fumes for six hours. The quantity of sulphur to be used for disinfection and fumigation will be 3 pounds of roll sulphur to each 1,000 cubic feet of space. The packages, sacks, and bagging belonging to emigrants which contain clothing must be disinfected in the same manner and at the same time as the contents. The material to be disinfected must not occupy more than 50 per cent of the room used for fumigating. Bedding will not be received on board.

"All emigrants presenting themselves for medical examination must be clean; a dirty person will not be examined, but will be rejected at once.

"Emigrants having a contagious disease of any kind will not be permitted to go on shipboard.

"Suspected criminals will be stopped until they can show that there are no charges against them or that they have never been in a prison or an almshouse."

It was learned that vessels often take on freight at other Mediterranean ports and then come to Naples for emigrants, and that no attention is paid to the cleanliness of the hold or the fumigation of the vessel when they load at other ports. It is impossible to do either properly after the loaded vessel reaches this port.

April 5 Assistant Surg. Young, Marine-Hospital Service, arrived, having been detailed for duty at Naples, and we had a lengthy conversation relative to the situation here. At his request a meeting of the steamship agents was called for the following day, at which he desired us to be present. April 6 we held a conference with the steampship agents at the U. S. consul's office, the consul being present, also Vice-Consul Wickersham and the representatives of the steamship companies hitherto mentioned.

Dr. Young outlined the work which he had been detailed to do concerning the examination of ships and emigrants, and stated clearly the methods he proposed to follow: That for the present, if the ships were found clean and came from non-infected ports and he was satisfied that the freight was not from and had not passed through infected places or been handled by those likely to be infected, he should not require the cargo to be taken out in order that the ship should be disinfected; but that if at any time he should consider such a step necessary he should require it to be done. He also outlined the method to be followed in the examination of emigrants, saying that he did not think it would be possible for him to make a proper examination on shipboard, and that he could not sign a bill of health for any ship that took emigrants on board which he had not examined in a manner which he considered satisfactory and in accordance with the instructions of the United States law. In answer to a question asked by one of the agents, whether officers of the Italian Government could be present during the examination of the ship or the passengers, Dr. Young replied that any official of the Italian Government or officer of the police would be cordially invited to be present; also, one representative from the line of steamships under examination, the United States officials, and one assistant with himself, and no one else; that he would not consent to have the subagents of the steamship lines present at his examination, and that it would be necessary to have a room into which rejected emigrants could go until he could make a more thorough examination than it was possible to make when they were preparing to go on shipboard. Dr. Young furthermore stated that when it was necessary to disinfect baggage he should have exclusive control of the operation, and that some method must be provided where this could be done under his supervision. The steamship agents asked many questions and discussed the proposed methods freely. Before adjournment each one stated that he would do all in his power to immediately carry out the new regulations.

April 7 we sent a second report to Surg. Gen. Wyman, Marine-Hospital Service, concerning the situation at Naples, and informed him that after the methods of examination and inspection had been provided for at Naples one of the steamship companies, to avoid the inspection, had sent between 500 and 600 emigrants from Naples to Palermo, with directions to put them on board the outgoing steamer at that port; and in the report suggesting the necessity of appointing an inspector at Palermo, as the U. S. vice and deputy consul at that place is the son of one of the owners of the Florio Rubatino Steamship Company and the agent of the Phelps Steamship Company, both lines engaged in carrying emigrants from Italy to the United States; also for the appointment of someone who could assist Dr. Young at Naples, because with the present number of emigrants going from Naples it is impossible for one man to do the work.

As there are a large number of Italian emigrants coming to the United States annually, some of whom do not belong to the desirable class, we took special pains to inquire what safeguards there were which could be made available to prevent the undesirable classes from emigrating to the United States.

We found that according to the laws of Italy every person requesting it may be furnished with a certificate from the mayor of the place where the person lives, which is called "*certificatto di buono condoteta*," or a certificate of good conduct. Upon this document there are indorsed all petty offenses, if any exist, which have been committed by the individual named, no matter how slight they may be, even if the offense required but a reprimand from the officials. There is also another certificate which may be obtained from the judicial authorities in the district where the person resides, known as "*certificatto di penalita*," which document describes any or all of the graver offenses, if such exist, for which the individual named therein has been tried or punished. These two certificates are required by the officials of the Italian Government from all persons who apply for a situation on what is known as the "civil list," and they must be obtained before anyone can be employed in a Government position. The two documents practically cover the life of the individual, and as there is but very little expense in obtaining them there could be no valid objection raised by an intending emigrant if these two documents were to be demanded by the Government of the United States before the emigrant leaves his country. These certificates apply only to emigrants born in Italy. From a careful investigation of the subject we were convinced that if these certificates were required it would prevent the emigration of a considerable proportion of those who are not considered desirable emigrants.

While we were in Naples application was made at the consulate by a person having a large quantity of wool for the necessary papers for its shipment to New York. The wool came from Russia and the usual certificates had been refused in Florence, Leghorn, and Genoa. The consular officers at those places had each notified the consul here they had declined to give the necessary certificates and he therefore refused them. He told the parties that if they would make an affidavit that the wool had been produced in a healthy district where no contagious or infectious disease had existed and would then have it properly disinfected in the presence of a consular officer, he would provide him with a certificate and invoice, all of which the owners declined to do, and the wool was not sent from Naples. The following form is used at this consulate:

CONSULATE OF THE UNITED STATES,
Naples, ———, 189 .

To ——— ———,

Health Officer, New York Harbor, N. Y.:

SIR: I, the undersigned consul of the United States of America at Naples, Italy, personally superintended the disinfection by steam and sulphur fumigation, and was also present at the medical and police inspection of the emigrants on board the steamship ———, which sailed from this port for New York the ———. The work in both departments was done in accordance with the instructions received.

I am, sir, your obedient servant, ——— ———,
U. S. Consul.

From Naples we went to Rome and had an interview with Consul-General A. O. Bourn, who informed us that although a good many rags were baled in Rome, none of them were sent direct to the United States, but he had been informed that they are first sent to Leghorn, from which port they are shipped, and investigations here confirmed the statements made by Mr. Bourn. In an interview with U. S. Minister Porter, he said that he had recently been questioned by a member of the Italian cabinet as to the nature of the duties required by the U. S. Government of the medical inspectors whom he had been informed had been sent to Naples and Genoa; stating that the Government of Italy had not been notified by the U. S. Government that medical inspectors had been sent officially to the principal Italian ports; and, as he had been questioned upon the subject, he thought that the American minister might be able to inform him. Mr. Porter said that he had received no official communication from his own Government concerning the duties of the inspectors, but that as soon as he had learned what they were, he would notify the Italian Government.

"From the conversation," said Mr. Porter, "and particularly from the questions which were asked me, I was led to the conclusion that the official mentioned," whose name was not given, "considered that it had been an oversight on the part of the U. S. Government not to inform the Italian Government of its intentions to send an officer of the United States having specific instructions relating to Italian subjects, to remain permanently at Italian ports." Minister Porter said further, that it would have relieved him of considerable embarrassment, and, in his judgment, would have been proper for the Department of State to have notified the Italian officials of this action on the part of the U. S. Government and that the U. S. minister should have been informed, so that he might have been prepared to make answer when questioned upon the subject, which at this time he was unable to do.

It subsequently transpired that one of the owners of an Italian steamship company had called upon the cabinet officer referred to and informed him that a

United States officer, sent by the Government of the United States, was located at Naples, and dictating methods of examining emigrants sailing from that port other than those which are prescribed by the Italian Government, and that the new methods demanded were interfering with and obstructing those prescribed by the laws of Italy, and he desired to know whether this was done by the consent of the Italian Government, and whether it would be continuously permitted. It was this question which led the official mentioned to call upon Minister Porter for information.

April 21 we called upon U. S. Consul J. V. Long, in Florence, who stated that he gave no invoices for the shipment of rags from Florence to the United States, but that many rags were shipped from Leghorn. From Florence large numbers of goat and kid skins are shipped direct to the United States. Upon inquiry as to whether he had positive information that the skins all came from within the area of his consular district, he replied that it was his impression that they did, but he had no positive information upon the subject. Subsequent investigation, however, showed that some of these skins came into Italy from Russia, the ordinary outlet from that country having been closed. There are within this consular district (and most of them in Florence) nine merchants who are engaged in shipping raw goat skins, kid skins, or cattle hair to the United States. Since the 1st day of January, 1893, until the date of our visit there had been sent from Florence 88,000 pounds of skins direct to the United States via Leghorn.

There are no disinfecting establishments here. The consul said that he had told the dealers what the United States regulations were concerning the disinfection of such materials, but that he had no personal knowledge as to the method of disinfection or whether it was done at all; that he relied upon the certificates brought to him by the dealers, of which the following is a copy, and that he merely certified the genuineness of the signatures of the officials who had signed the certificates. Neither he nor his assistants had ever visited the establishments where the skins are packed.

FORM OF A BILL OF HEALTH.

COMMUNE OF ———, OFFICE OF HYGIENE.

The undersigned Syndic of ———, at the request of ——— ———, does certify that —— bales marked ———, weighing —— kilograms, containing ———, to be shipped to ———, via ———, were gathered in the warehouse of the said ——— ———, located in this city, which is entirely free from any contagious or epizootic disease.

Done at the city hall this ——— ———.

——— ———,

The Syndic.

THE KINGDOM OF ITALY, CITY OF FLORENCE.

I ——— ———, U. S consul at Florence, Italy, do hereby certify that the foregoing is the genuine and true signature of ——— ———, the Syndic of ———.

Witness my hand and seal of office at Florence, Italy, this ——— ———.

——— ———,

U. S. Consul.

The investigations made here disclosed the fact that none of the skins or the hair is disinfected, and that no pains are taken to determine where the goods come from; we were told that some of the skins may have come from Russia.

April 28, a report was sent to the Marine-Hospital Bureau concerning the shipments made from Florence, and of the liability that exists for the importation of goods from infected districts, and the necessity for watchfulness in order tc prevent their admission into the United States.

May 1, we went to Leghorn, and called upon U. S. Consul R. H. Ford, from whom we learned that the rag business at this place was large; shipments being made direct to the United States, but in much larger quantities to England, and that a great many rags are received at Leghorn from ports on the Mediterranean. Two firms are engaged in shipping rags direct to the United States, Charles Mallenchinni, and Cerri Fellippi & Co.; each of these firms send at least 1,500 tons a year to Philadelphia, and to Springfield, Mass. It is said that these firms select the best rags for the United States trade, which are needed to make the highest grade of writing paper.

The rags which we saw in the warerooms were all white, most of them linen: they said that they sent no colored rags, flax waste, or bagging to the United States, but they use the old bagging to bale up the rags which were not disinfected, although, under the direction of Consul Ford, they now disinfect rags in accordance with the provisions of circular No. 143 of the Treasury Department.

The disinfecting rooms are a part of the warehouses; they are built of heavy masonry, the ceilings being arched: the windows are tight, and when disinfecting is going on inside shutters are closed, thus effectually preventing the escape of the fumes. Rags are disinfected during the night, the doors being opened at 6 a. m.; during the day the rooms are aired and used for sorting, the parties not having sufficient space for disinfecting purposes outside the warehouse; the local health authorities require a certificate from the dealers here, which must be signed by the syndic of the community where the rags are gathered, that no contagious diseases exist at that point. As many of the rags are sent into Italy from other countries, it is impossible for the dealers to know where they were gathered or for them to make truthfully the certificates required. Sometimes the health authorities cause the rags coming from the outside to be disinfected, but there is no general rule concerning the matter, and this is not often done. Most of the rags are shipped to England by the Anchor Line. The consul said that he personally superintended the process of disinfection, visiting the establishments every evening; that he ignited the sulphur, locked the door, and took the key with him, and opened the door on the following morning. The consul has insisted that all rags intended for the United States shall be disinfected when they come into the warehouse and before they are sorted, believing that in this manner a better check can be kept upon the disinfected rags; each bale after disinfection has a lead clamp tag affixed, marked "Disinfected, U. S. consul, Leghorn." We suggested that he should put a seal over the keyhole of the disinfecting chamber when he left at night, to guard against the room being opened during his absence, and that the rags should be spread more thinly upon the racks, which he said should be done at once. With these suggestions carried out the method of disinfection practiced here leaves nothing to be desired. One reason why rags are shipped from Leghorn in such quantities is that they are used to pack the marbles from Carrara, which are shipped from this port, and as something soft must be used for packing, freight on rags is often nominal, for the marble shippers must have them to protect the marble in its finished or unfinished state. The following is the form of certificate in use at this place:

CERTIFICATE OF DISINFECTION.

CONSULATE OF THE UNITED STATES OF AMERICA,
Leghorn, Italy.

I hereby certify that the —— bales of old rags marked and numbered as follows: ———, and shipped from ———, have been, at the request of ——— ———, disinfected under my direction in the manner required in process No. 3, as prescribed by Treasury regulations of February 24, 1893, in conformity with the quarantine law of February 15, 1893.

In testimony whereof I have hereunto set my hand and seal of office, at Leghorn, Italy, this —— day of ———, 1890.

From Florence we went to Venice and called upon the consular officer four separate days within the office hours named on the card upon his door. Although his clerk told us he was in the city, we were unable to find him. From other sources we ascertained that no rags are exported from Venice direct to the United States, and that very little merchandise is sent which is liable to carry infection; there is no emigration from this port. From U. S. Consul J. T. Hartigan, at Trieste, we learned that no rags had been exported direct to the United States since 1891, and that they are not now sent to England. Goatskins and kidskins are shipped to the United States in considerable quantities. They come from Montenegro, Croatia, Servia, and Bosnia; it is said that none come from infected districts, but there is no positive proof that they do not. Upon arrival in Trieste the skins are unbaled for assortment, and are then said to be subjected to a process of disinfection by treatment with "antiputrin," a secret agent. They are also said to be subjected to disinfection with "naphthalin." Latterly Consul Hartigan has required a certificate from the port physician to the effect that these goods have been disinfected by spraying with a solution of carbolic acid. No wool or hair is exported direct to the United States. Certificates of origin are now required to accompany merchandise coming from the interior, and goods coming from suspected places are either returned or burned; but officials are so anxious to suppress all news of cholera in their respective localities that such certificates are not always to be relied upon.

The skins are gathered in the interior by small purchasers and are sold to merchants at one of the larger places, to be forwarded to wholesale dealers. The certificates from the larger dealers are worthless, because it is impossible for them to know where the skins are gathered, their certificates merely showing that no cholera exists at that place. But the disease may exist in the country where the skins are produced and the merchant be ignorant of the fact. In any event it is not in his interest to scrutinize the matter too closely, thus injuring his own trade. As a rule the skins are pushed on toward the port as rapidly as possible. Consul Hartigan gives this matter his personal attention, being anxious to prevent the introduction of contagion into the United States. The authorities of Trieste are very much alarmed concerning the health of the city and are doing what they can to make the place clean.

The system of sewerage is poor and many parts of the city unclean, and under favoring circumstances might become centers for the development or spread of epidemics.

There is no emigration at present from Trieste to the United States.

May 11, we reached Milan and remained one day, during which time we found that the rags gathered in and about this place are sent to local paper and shoddy mills, but few being exported; none go direct to the United States. From Milan the route via St. Gothard was followed toward Basle, a road over which large numbers of emigrants travel. It was in an emigrant train upon this road that several persons were taken ill and were put off at a small village. The disease proved to be cholera, but it could not be determined from what place the people came or their destination. It was known, however, that they were emigrants. The disease spread to the villages and there were many deaths. The cholera limited itself to this community, which was in an isolated position among the mountains.

On the 13th we reached Lucerne. From this place rags are sent to local dealers; they do not go direct to the United States. May 15 we arrived at Basle, at which point a number of railroads converge, bringing emigrants from all points, and where there is an agency devoted especially to forwarding emigrants to the United States. It is from this place also that the Compagnie Générale Transatlantique arranges for the transportation of emigrants, and competition is active among the steamship companies for steerage passengers over their respective lines.

The French line has its own special emigrant trains which run from Basle to

Havre by way of the Jura Simplon Railroad, in Switzerland, and the Chemin de Fer de l'Est, in France. The emigrants are mainly forwarded by the agency "Zwilchenbart" and are provided with through tickets to New York, if their destination is in the United States. The emigrants reach Basle from all parts of the Continent, wherever the agency "Zwilchenbart" has subagencies; and they are scattered throughout Europe. This agency makes a special point of securing emigrants from Switzerland, in which country may be seen at various places large advertisements covering the sides of buildings setting forth the advantages possessed by this agency to provide for intending emigrants; also, the superior conditions which exist in the United States for emigrants going to that country. This is the only country in which we saw notices inciting emigration. Although diligently sought for we saw no posters, handbills, or other notifications appealing to emigrants; and at the several steamship agencies visited we found their handbills contained nothing more than the sailing dates of their steamers and the rates of fare.

In Italy, however, the subagents of the steamship companies go into the cities and villages and personally incite emigration, by depicting to the ignorant people the great advantages which there are for them in America, no doubt inducing a large number of those who come to leave their homes. Arrangements are made, for all those who propose to emigrate, to meet this subagent at a time and place agreed upon, and he personally conducts the party on board the steamer, receiving a commission from the steamship company for each ticket sold.

May 16 we reached Paris, and visited the U. S. consulate. The consul-general not being present, we could obtain no information about the invoices of rags sent from the consulate, but learned that no rags are now shipped from Paris direct, excepting "new cuttings," which are sent without being disinfected, under the ruling of the Treasury Department. Relative to the methods employed in collecting and disposing of the rags in this city, mention is made in another part of this report. From the sous-chef of the Compagnie Générale Transatlantique, M. Eugene Boncardi, we learned that the company has a monopoly of the steerage passenger business from France. The port to which they send their passengers is Havre. The emigrants are chiefly Italian and Swiss, though there are some from the Scandinavian countries, and occasionally from Russia, but of the better class. The company employs upwards of 50 general agents and over 300 subagents. M. Boncardi said this company was the only one in Europe which owns and operates special emigrant cars, similar to those used for the same purpose in the United States. They take charge of the emigrants on the frontier of France (generally at Basle), and from there transport them to their steamer and through to New York. He said that the rates charged by the French line were higher than rates on other lines, and this circumstance enabled them to secure a superior class of emigrants; that it was their intention to keep emigrants in the city of Havre as short a time as possible, aiming to have them reach there in good time to get on board outgoing steamers.

While in Paris we endeavored to ascertain from the "Bureau of Hygiene" some information concerning the existence of cholera in France. We had previously requested Vice-Consul General Hooper to get such information as we wanted, but my request was respectfully declined on the ground that he had himself attempted to get this information several times but had always been rebuffed, and he did not wish to repeat the experiment. In attempting to secure the information ourselves, we found the official attitude of those who could give information concerning the disease anything but diplomatic. The officials were notified that we were commissioners from the United States; that the information requested was to be used purely in an official report and for no other purpose, but answers to the most courteous questions were evaded, or answered with irritability, not to say discourtesy, and on one occasion we were told flatly that it was useless to ask any questions on the subject, for they would not be answered. Failing to obtain the desired information from the health officers, and thrown upon our own resources, we obtained the information requested from a gentleman holding an official position which gave him access to the official records, whose name is withheld at his own request. The authority, however, is of the highest character and perfectly reliable. My informant stated that cholera was known to exist in the provinces of Bouches du Rhone, Morbihan, Gard, L'Hèrault, Var, Aude, Rhone, and L'Orient. It was epidemic in but two provinces, that of Bouches du Rhone and L'Orient, but there were a sufficient number of cases in other provinces to make the situation appear grave. We were informed that in Marseilles, where the French officials persistently denied the existence of the disease in an epidemic form, that it was at that time severe in the Italian quarter of the city, the people affected being among the lowest and filthiest. It had come to the knowledge of the gentleman who gave me the information that during the earlier part of June there were as many as 14 cases reported daily; this was on June 6, and there was no abatement of the disease for some days thereafter. The disease in this section of the city was so severe that the Italians left for their own country; at the frontier strict quarantine regulations prevailed, and bedding, dirty linen, etc., were seized and burned on the spot; everything else being subjected to disinfection to prevent the disease from entering Italy.

At Havre we found a number of emigrants awaiting the outgoing steamer, and, as we had been informed, they appeared to be of a superior class. They were from the northern part of Italy and Switzerland, and the majority had secured transportation for the Western States. Some were going to California, and nearly all expected to till the soil.

The boarding houses in Havre, where emigrants await the arrival of the steamer, are inferior. They are generally located in a poor part of the city, are untidy, overcrowded, and unsuitable places. There appeared to be no official oversight, each house being operated as its proprietor thought best. There is room for great improvement in these establishments, for sanitary laws are defied.

There is no proper place for disinfecting baggage or merchandise, and it is not done. The rags gathered about here and sent to the city are not disinfected. Some of them are used in the paper mills in France and some are sold to the person "who pays the highest price for them." We afterwards learned that they go to England. From this place we returned to London, and on June 2 visited the rag establishment of Mr. Robert Hough, London Wharf. Mr. Hough and Mr. Cohen are the largest rag exporters to the United States in the city. Mr. Hough informed me that he received rags from many places in Europe, but the English Government now required that rags coming from the Continent should be disinfected unless they are landed for export, in which case they are permitted to lie upon the docks for seventy-two hours. At the end of that time they must be disinfected or destroyed. He said there had been considerable discussion as to the best means of disinfecting rags. The officials of the British Government do not like the sulphur process, and it has finally been decided that a steam disinfecting apparatus made by Manlove, Alliott & Co. should be used. Mr. Hough said that the machines here and in Hull were the only ones in use in England that he knew of. The machine which we saw is an oval chamber made of boiler iron, about 6 feet high, 3 feet 10 inches wide, and about 8 feet long. It has a double shell, the space between the inner and outer plate being about 2 inches. The boiler iron of the inner and outer shells is riveted together after the manner of a steam boiler. One end of the chamber opens the entire size of the oval, and is large enough to admit one bale of packed rags. The British Government demands that the bale must be put in and disinfected without opening, because to open it would expose the workmen to any infection contained. After the bale is in the chamber the front door is fastened hermetically and steam at high pressure is admitted into the shell. When the proper temperature has been reached, which is indicated by a steam dial outside (usually 230° F.), the air is exhausted from the chamber where the rags are placed, so that the bale is in a vacuum; when the vacuum is effected, which is also indicated by an appropriate dial, dry steam is admitted into the chamber, and Mr. Hough said that he had seen a self-registering thermometer which had been previously packed in the center of the bale, and which was removed after the bale was taken out, register 220° F.

The apparatus, he said, worked very satisfactorily, and meets with the approval of the Government inspector; he stated that the bales are permitted to remain in the apparatus from ten to fifteen minutes; but it required at least twenty minutes to maneuver and disinfect each bale. All rags which he exports to the United States he said were opened, as required by the Treasury regulations, and he showed a "cradle" in which the loose rags are placed for disinfection before being put into the chamber; the apparatus was not in use at that time. He also said that rags intended for the United States were allowed to remain in the apparatus for one-half hour, and that after this they were rebaled, and the sanitary inspector, Dr. J. Higham Hill, gives them a certificate to be placed on each bale certifying that it had been disinfected. He said that the doctor was not present to see the process, and their own workmen pasted the certificates upon each bale. In reply to my question whether this method of attaching the certificates had always been the rule he said, "Yes; ever since the Treasury Department circular was issued it has been done in this way." After the certificates are pasted on the bale the proper officer issues an order for the release of the disinfected rags and they can then be taken on shipboard. Mr. Hough said "The cost of disinfection, counting everything, is about 25 shillings (sterling) per bale." He admitted receiving rags at this time from France, and upon my expressing surprise he said: "There is no cholera in France; it is a false alarm; if there has ever been any there it is all gone now, and, in any event, I don't think rags carry disease germs; the present fad for disinfection will not last much longer." In response to inquiries he said they were not sending as many rags to the United States now as they did during the winter and early spring; at that time the buyers rushed in a year's supply, fearing that rags might be shut out in the spring. "During the winter I shipped a great many rags, and that accounts for the lessened sales at this time." He said also, "Some firms do not disinfect rags as required by the Treasury circular, and this is unjust to me, because I have to expend an extra amount of money to comply with the American and British regulations, and those exporters who do not comply with the regulations save this expenditure." He said "there should be some general rule, one way or the other, which all should be compelled to follow." We asked him whether Mr. Cohen, the other exporter, had one of the steam disinfecting machines, and he replied, "No; he relies on the sulphur process." The establishment of Mr. Cohen's is the one we visited in January last and which has been already described (see p. 56).

From experiments in methods of disinfection made under direction of the local Government board, and which were supervised and reported upon by H. F. Parsons, M. D., the following extracts are made:

"A tightly trodden bale of white rags was placed in the machine (described above) for two hours with steam at 15 pounds' pressure in both the casing and the interior, the steam being let off from the interior and reapplied every thirty minutes.

"At the end of two hours a thermometer in the center of the bale registered 170° F.; a thermometer suspended in the machine showed 260° F.

"The experiment was repeated two days later with the same bale and under the same conditions, except that the pressure of steam was kept constant. At the end of two hours the thermometer in the bale registered 185° F.; that suspended in the machine marked 255° F.

"A full-sized bale of press-packed cotton rags measuring 3 feet 6 inches by 3 feet by 3 feet 2 inches and weighing 5 hundredweight was placed in the machine and exposed for four hours to steam at 15 pounds' pressure, relaxed every half hour, the pressure of steam in the jacket being maintained at 30 pounds. At the end of the four hours a thermometer in the bale registered 258° F.

"As a doubt was raised whether the hole in which the thermometer had been placed was sufficiently plugged to prevent the steam finding its way to the thermometer the experiment was repeated under similar conditions, except that the hole instead of, as in the previous experiment, being stuffed with rags was firmly plugged with a conical wooden plug. After four hours' exposure the thermometer in the bale registered 252° F., that hung up in the machine marking 273° F.

"At the end of three hours, however, in another similar experiment with the same bale the temperature had only reached 160° F., showing that four hours is the minimum length of exposure that will suffice under the conditions to attain a temperature that may be relied on for thorough disinfection."

From these experiments it would appear that the regulations requiring the bales to be opened and the rags spread loosely on racks was essential to secure speedy disinfection by steam heat.

Dr. Parsons' report contains the results of numerous experiments with different kinds of disinfecting apparatus, and it appears that preference is given to the apparatus above described.

After making a careful inspection of the manner in which rags are received and shipped to the United States from the port of London we called on Consul-General Collins and informed him of the results of our observations, and he immediately sent a dispatch to the Treasury Department calling attention to the continued irregularities in the rag business at that place. The investigations made developed the fact that rags are shipped to London from several ports in France upon trading vessels; that they are taken "overside," many of them lying on the docks more than seventy-two hours, which is the limit of time prescribed by the British regulations, and that they are put on board steamers bound for the United States; the rags are not disinfected, either in France or England, and it is impossible to know where they had been gathered.

June 15 we visited at Greenwich Dr. William Collingridge, medical officer of health to the port of London. In speaking of the methods of disinfecting rags he said that the apparatus used by Mr. Hough had been tried under his personal supervision a great many times and had always proved successful when properly managed.

The doctor said that he had caused a thermometer to be built into a bale of rags packed in the usual manner and found that the thermometer registered 235° F. when the bale had been subjected to the steam pressure for twenty-five minutes and the proper vacuum obtained; that in one experiment he had arranged a thermometer in the middle of the bale with an electrical attachment adjusted so that when a temperature of 212° was reached a bell would ring; that it required about thirty minutes to reach this result when the machine was properly managed. The doctor laid considerable emphasis upon this point.

We asked whether the rags used for these experiments had been packed with hydraulic pressure, but he did not know. He said, however, that, in his opinion, rags which were solidly pressed together could not be so readily or quickly disinfected; and when asked if, in his opinion, it would not be better to have all the bales opened for the purpose of steam disinfection, he replied, "It certainly would be much better and surer." The doctor further stated that he hoped disinfection of some kind would be made compulsory, not only at this, but at all times, and that he should do all in his power to bring this result about, and expressed the hope that the authorities in the United States would insist upon the same thing, because to leave the matter of disinfection to be carried out only at such times as there were epidemics would lead to serious difficulties, and it would take a considerable period of time to start the process properly when it was most needed. Dr. Collingridge said that several outbreaks of smallpox had occurred in England which were traced directly to the introduction of foreign rags; that in investigating the subject he had seen hospital cloths, bandages, poultices, etc., in the bales examined. The only rags over which Dr. Collingridge has supervision are those intended for use in England. At this time they must all be disinfected without opening the bales. To superintend this matter he sends an inspector to the establishment where the rags are to be disinfected, who remains during the entire period of disinfection, and until it is finished. When the rags are released and sent to their destination no certificates of origin are required, and they know only in a general way where the rags come from. The doctor remarked that there were a good many difficulties incident to the proper disinfection of rags, particularly with reference to the supervision of the process, which it was necessary to watch from beginning to end.

Through the courtesy of Dr. Collingridge we are in receipt of the last half-yearly report of the medical officer of health for the port of London, to the local government board, from which the following pertinent remarks are extracted:

"The rag trade as a whole has raised objections to the disinfection of rags, on the grounds that it will injure the fiber and thus lower the value of paper making, etc.

"This view, however, is not shared by experts who have investigated the matter, and it is most probable that the main difficulty will be rather the cost of such treatment than its impracticability, and that if the only alternative be prohibition, disinfection will be found comparatively simple.

"As soon as the order was issued, experiments were made with loosely packed bales of rags and it was clearly demonstrated that about thirty to forty minutes exposure to steam, at a pressure of 20 pounds was sufficient to raise the interior of the bale to a temperature of 240° F., while for hydraulically packed bales a longer period was necessary.

"The great obstacles to the erection of the necessary apparatus are the initial cost and the uncertainty of the duration of the local government board's order. One firm only has actually purchased the machinery and arranged for its erection, at suitable waterside premises; this in all probability will be in working order before the end of January.

"The order clearly states that the expense is to be entirely borne by the consignee or owner of the rags, and the only duty of your medical officer is to furnish the certificates, without which they can not be removed from the custody of the custom-house authorities. But as I have previously pointed out, these orders are intended to deal with the danger of infection from cholera. No doubt there is a certain risk of its importation in rags, consisting of old and filthy clothing, though there is but little if any direct evidence as to this.

"With regard to smallpox, the case is otherwise. Dr. Parsons and other observers have quoted numerous cases where outbreaks of smallpox have occurred at paper factories from the handling and sorting of infected rags.

"Many of the consignments of rags brought into this country are in an indescribably filthy condition, containing insects, blood fæces, and even remains of poultices, and other hospital dressings. It can not be wise to allow such materials to pass into the country without proper treatment, and I would again suggest that it would be simpler and safer instead of having from time to time transient prohibitory regulations which cause serious dislocation of trade and annoyance from their uncertainty, to have a fixed and definite plan of dealing with such goods.

"If all rags other than absolutely new cuttings were required to be disinfected before being admitted, the requisite machinery would quickly be established and practice would rapidly diminish the cost of treatment to its lowest possible point, while there would be no longer any need for special orders in the face of an epidemic. Then the risk of infection not only of cholera but also of smallpox and scarlet fever (the diseases most likely to be conveyed by such materials), if not altogether obviated, would at any rate be greatly diminished.

"This view, your worshipful committee will remember, I have previously urged."

Relative to the probable invasion of cholera this season, Dr. Collingridge said they were keeping a very sharp lookout. They employ a steam launch, which is used to patrol the Thames for the purpose of making visitations to all vessels which come into or lie for any time in the river, so as to keep them under observation, not only when they arrive but afterwards, and he has authority to require that any vessel found in an unsanitary condition shall be immediately removed to a proper place, and there cleansed and fumigated; this applies to all vessels, whether they carry passengers or freight.

June 16 we met the agents of the several steamship companies whose vessels come to London in the office of the consul-general, where a meeting had been called for the purpose of explaining to the agents the regulations made operative by the new quarantine law. The steamship companies here have resented the examinations demanded under the recent law, and in one instance had disregarded explicit instructions given by the consul-general and the vessel left port without a bill of health, although the agent had been warned by the consul-general not to start the ship without having her inspected. At this session the steamship agents spent some time in endeavoring to show that it was impossible to have an inspection made, and that in their opinion it was entirely unnecessary. In response to the request of the consul-general, we told them that the inspection required here was being cheerfully acquiesced in by all the great transatlantic lines, whose officers gave every assistance that the prescribed regulations might be thoroughly carried out; that whether they considered such a measure necessary or not was not the question; the U. S. Government had issued regulations which made the examinations necessary, and in default of proper inspection health certificates would be withheld by the consul. They then asked what sort of inspection would be required, and upon being informed what was being done elsewhere they interposed the most ridiculous objections to its being done here.

Among other things they said that "a steamship would not stand upright if all her cargo was out at the same time, and the only way to keep her in proper position was to lower new cargo into one hold as fast as it was taken out of the other;" that it would be "necessary to have an inspector for each ship, and that he must be on the ship all the time;" that "inspection could not be made at the dock because it would interfere with loading and unloading," etc. They were told that it must be done or the bill of health would be withheld and the vessel returned from the other side without being permitted to unload either passengers or cargo. When they understood that this measure would be insisted upon, they then requested permission to employ a medical inspector of their own choice, agreeing to pay him themselves; they were told this could not be done. They then requested permission to employ as many assistants as they thought necessary, agreeing to pay them a fee which they would determine; they were told that the consul-general would appoint an inspector and as many assistants as might be necessary to properly perform this work. During the interview it was learned that some ships which sail from London stop at Swansea to take on passengers instead of having them come to London; this, they said, would necessitate the appointment of an inspector at that place. From the records of the consular office it appears that about 22 steamships leave London for ports in the United States every month; some have regular sailing days, others have no fixed date. The docks along the Thames River are very extensive, and it would be impossible for one inspector to do all the work necessary at this port to inspect vessels, emigrants, rags, etc. One of the agents present admitted that rags were shipped from France with other merchandise, and were at once loaded on vessels for the United States unaccompanied by certificates of origin, and without disinfection, going "overside," which means that they are unloaded on the docks in London and kept until the ship is ready to receive them. The subject of inspection and disinfection of ships at this port is in the most unsatisfactory condition; in fact, at the date of our visit there was no inspection at all.

In view of the fact that vessels from French ports where cholera is reported arrive in London almost every day, it would seem imperatively necessary to station forthwith a medical officer detailed for inspection duty in London to supervise the inspection required by the recent law; and accordingly this suggestion was made to the Surgeon-General of the Marine-Hospital Service.[1]

As an evidence of the uneasiness existing in London concerning cholera, the Hon. Mr. Chamberlayne, M. P., on the 16th of June, called the attention of the House of Commons to the epidemic in France, requesting the local government board to report to that house what steps, if any, they had taken to prevent cholera from entering England, and that they make immediate response.

That the apprehension is well founded was clearly demonstrated by my investigations. Traffic from France is unimpeded into England; vessels from Boulogne, Calais, Dieppe, and other French ports reach England daily, laden with vegetables, fruits, butter, eggs, etc., as well as cottons, silks, and other merchandise, and large quantities of rags; curiously enough, English regulations require that rags only must be disinfected; manufactured articles known to come from cities where cholera exists are permitted to enter without restriction or disinfection. Large numbers of rabbit skins are sent into England from the country districts of France, and they are not subjected to disinfection or other quarantine regulations; they come from remote districts, are gathered by small buyers, who forward them to depots where they are baled and sent to England and the United States

In view of the close commercial relations existing between France and England, and the fact that cholera is extending in France, it would seem all the more important to establish such regulations at those ports in England from which vessels sail for the United States as will insure an enforcement of the new regulations that our own shores may be guarded from the encroachments of this dreaded disease. Since the Marine-Hospital Service has stationed officers at Liverpool and Southampton for the purpose of inspecting emigrants and baggage destined for the United States, we have learned that it is becoming customary for emigrants to go to Hull and Glasgow, where there are no inspectors, and where they take passage on steamships bound for the United States and for Canadian ports. The emigrants at these places when conversing with those whom they have no reason to believe are in any way connected with the U. S. Government say frankly that they are bound for the Western States; to those whom they fear may be connected officially with the Government they say that they are going to settle in Canada. The largest number sail from Hull. It has also been noticed that with the increase of numbers going from Hull or Glasgow there has been a decrease in the numbers sailing from Liverpool and Southampton; at Southampton since the regulations concerning inspection have been in force steerage passengers have fallen off nearly one-half, and a large decrease in numbers has been observed at the port of Liverpool. Another significant feature is the proportionate increase in the numbers of immigrants arriving on steamers bound for Quebec. It is found that the emigrants, at least so far as those coming from Great Britain are concerned, shun the places where strict inspection and disinfection of baggage is required, and where they are kept under close observation from the time they reach the port until they go on shipboard, and go to those places where they are not required to undergo the methods prescribed, apparently dreading the operation of a compulsory bath and the necessary washing and disinfection of their clothing, preferring to go on board ship where there are no such salutory and wholesome arrangements.

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[1] Dr. Fairfax Irwin, Surgeon Marine-Hospital Service, has since been ordered to duty as inspector at the port of London.

We found that the International Navigation Steamship Company, whose vessels sail from Southampton, receive all their continental emigrants upon arrival in England and conduct them to Blackwall, where they have necessary arrangements to lodge them until sailing day, and where they compel them to cleanse themselves and their clothing, which, if necessary, is disinfected. They are kept under close observation until they are put on a railway train at the "Emigrant's Home," and taken directly alongside the steamer at Southampton, to which they are immediately transferred, and where they undergo medical inspection by an officer of the Marine-Hospital Service. If the same sanitary methods are not required at all the ports of debarkation--which is the case at this time—the emigrants will seek those places where they are permitted to roam about as they please until sailing date, and go on shipboard without observing the wholesome and salutary measures which are required, as, for instance, at Southampton. If strict supervision and sanitary measures are required of one line of steamships it should be required of all; and any measure which does not require equality in treatment of the emigrant would be manifestly unjust.

In conversation with Capt. William G. Randall, commanding the steamship *Paris*, he told us that during the cholera epidemic of last season (1892) he commanded one of the "Red Star" steamships sailing from Antwerp, and that during the prevalence of the cholera he caused all the water used by passengers and crew of his ship to be boiled before it was used, whether for drinking or any other purpose. He said there was no special difficulty in doing this. He also said that during the entire season not one case of diarrhea occurred among the passengers he carried.

During the latter part of our investigations the rag exporters informed us that they were now sending very few rags to the United States, that importations had almost entirely stopped; and the New York agents of the foreign exporters told us the same thing. Desiring to ascertain how many rags were being imported we visited the custom-house, and from the statistics which had been prepared showing the importations for the month of June at the port of New York we found that more than 8,750,000 pounds of rags have been received in New York alone. They came from Belgium, France, Germany, Italy, England, Ireland, and Japan, the largest quantities having been shipped from Germany, Italy, and Japan.

The following tables were obtained from the bureau of statistics showing imports of rags into the United States for the five years ending June 30, 1893, and the countries from which they came.

For the years 1892 and 1893 there is a table showing the imports of rags by months at the ports of New York, Boston, and Charleston. Nearly the entire import of the country came in at those ports.

The table of imports by months shows the great increase in the importation of rags for the six months ending June 30, 1893, over the corresponding period in the preceding year, thus verifying the reports which we sent to the Surgeon-General of the Marine-Hospital Service while investigating this subject abroad. The statistics show that the importations for the six months ending June 30, 1893, exceeded by 38,189,307 pounds the importations for the corresponding months in 1892. These statistics show also that in 1893 there was a large increase in the quantity of rags imported from Belgium and Germany, although dealers in those countries complained to us of great depression in their trade; and the Levy Brothers' pamphlet (p. 1) already quoted was prepared to show, among other things, "that the trade encountered drawbacks and has suffered great losses by the embargo of the last year." The statistics show that the importations from Germany direct in 1893 exceeded those of any preceding year by nearly 6,000,000 pounds, without taking into account the rags sent from that country to the United States via Belgium, Holland, or England; and a large quantity found exit through those countries, despite the "embargo" complained of.

The importation of rags from Belgium direct to the United States during the year 1893 exceeded by more than 12,500,000 pounds the quantity exported from that country in either of the five years preceding.

The full tables, showing importations and values by years, are herewith appended:

Imports of rags, other than woolen (paper stock), into the United States in the years 1889 to 1893.

Country from which imported.	Year ending June 30—									
	1889.		1890.		1891.		1892.		1893.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Pounds.		*Pounds.*		*Pounds.*		*Pounds.*		*Pounds.*	
Austria-Hungary	1,052,748	$22,829	384,834	$3,323	198,370	$2,364				
Belgium	22,384,079	441,126	24,132,670	441,574	21,931,508	361,495	29,084,622	$375,259	41,635,009	$649,533
Denmark	198,895	2,446	559,958	7,712	573,810	5,344	358,751	2,540		
France	7,882,899	161,852	5,251,294	100,423	5,126,117	113,984	5,624,615	124,859	6,771,723	117,763
Germany	53,509,373	917,145	50,815,892	874,719	44,777,613	780,739	47,162,279	738,335	59,380,669	1,098,406
United Kingdom:										
England	17,042,573	325,422	25,620,282	436,666	16,899,187	279,508	8,240,325	139,700	15,143,122	290,084
Scotland	2,989,666	59,892	2,291,522	35,771			1,258,607	20,064	2,610,342	43,530
Ireland	6,681	384	12,081	635			29,866	1,511	383,959	4,376
Italy	6,871,677	220,216	5,871,546	204,624	5,560,322	180,699	4,694,204	150,030	6,006,247	186,024
Netherlands	7,086,496	115,695	4,902,810	79,067	6,379,723	105,234	6,294,733	91,559	8,524,540	118,446
Portugal					200	2				
Spain	212,716	3,522	102,469	1,608						
Sweden and Norway	136,184	1,625					300	4	132,216	3,628
Dominion of Canada:										
Nova Scotia and New Brunswick	5,619	70	684	9	27,733	161				
Quebec, Manitoba, etc	171,325	4,904	3,000	23	1,181,673	13,455	2,153,814	22,054	1,779,550	19,694
West Indies:										
British	3,000	42	1,700	17	5,725	72	400	6	1,400	16
French					600	10				
Dutch									300	3
Haiti	300	3								
Spanish Cuba					500	8			400	5
San Domingo					200	3				
Argentine Republic	7,100	91	4,400	48	4,200	51	500	6	1,700	18
Brazil	2,000	27			5,200	69	300	4	2,200	23
Chile									200	2
Guiana, British					500	7	300	4		
Uruguay	1,600	21	3,300	45	1,300	18	1,100	14	4,220	65
East Indies, Dutch									200	2
China	4,612	33	723,800	8,658						
Japan	16,244,600	213,037	17,723,731	240,555	10,684,250	140,876	7,008,883	75,574	10,588,550	113,993
Africa:										
British	700	7	400	4	300	3			200	2
French					300	4			400	5
Portuguese			800	8					800	8

Turkey:										
Egypt	6,887,415	62,182	10,629,905	94,433	7,698,581	75,338	6,002,976	56,484	7,770,665	79,067
British possessions, all other	2,800	24								
Mexico	33,000	244	18,008	133			15,000	118		
Azores, Madeira, etc	800	12								
Switzerland			46,253	556					78	41
Central America, Honduras					300	3	500	5		
Total	142,738,858	2,552,858	149,101,331	2,530,611	121,058,212	2,059,447	117,932,075	1,798,139	160,738,690	2,724,734

Imports of rags for paper stock into the customs districts of New York and Boston and Charlestown (by months) during the years ending June 30, 1892 and 1893.

Months.	Rags for paper stock imported into—			
	New York.		Boston and Charlestown.	
	Quantity.	Value.	Quantity.	Value.
1891.	*Pounds.*		*Pounds.*	
July	3,145,094	$49,966	5,641,364	$82,464
August	5,231,980	87,679	4,823,336	67,321
September	3,361,134	57,688	4,403,030	69,455
October	4,501,356	78,990	3,048,111	42,181
November	4,868,776	77,670	5,661,627	82,917
December	1,562,122	28,434	5,709,989	82,332
1892.				
January	4,940,202	87,235	6,273,336	85,794
February	5,097,924	78,589	4,178,429	57,084
March	9,113,110	117,719	2,584,017	36,847
April	2,686,493	46,733	3,982,853	54,732
May	2,949,294	74,649	5,032,229	70,672
June	3,443,554	65,172	4,514,362	62,869
Total 12 months	50,901,039	850,524	55,852,683	794,666
1892.				
July	2,517,991	38,275	4,973,276	71,864
August	3,998,387	80,434	5,529,743	82,266
September	6,199,045	87,788	7,241,111	83,215
October	2,656,191	30,517	4,568,297	65,702
November	932,576	20,110	5,134,591	86,318
December	4,939,566	139,994	8,732,383	151,532
1893.				
January	5,277,261	114,596	8,767,397	135,180
February	5,832,616	74,381	2,689,815	45,164
March	12,631,937	257,616	7,799,541	129,327
April	12,139,557	227,762	12,927,443	216,105
May	13,027,268	243,620	1,900,720	37,364
June	8,636,946	155,687	1,354,610	27,718
Total 12 months	78,789,341	1,470,780	71,618,927	1,131,755

DO RAGS CARRY DISEASE GERMS?

During the investigations the following question was asked of the proprietor or agent at every rag establishment visited: "Do you know of any case of contagious disease of any kind or a case of sore finger (anthrax) which has occurred among your employés?"

With very few exceptions the replies were in substance: "No. We have never known or heard of a case of contagious disease or of sore finger occurring among our work people."

The unanimity with which the answer was made naturally excited curiosity, especially as one of the commissioners (Dr. Kempster) was personally cognizant of two epidemics of smallpox which first appeared among rag sorters employed at a paper mill, and the origin of the disease was traced directly to the rags.

It was therefore determined to make such investigations as were necessary to ascertain the facts. The following table gives in condensed form the result of these investigations, but as the subject is one of great importance we have thought it proper to give also a brief statement of the several attacks of disease mentioned, and the sources of information:

SMALLPOX.

Locality.	Date.	Authority.	Publication.	Origin.	Cases.	Deaths.	Remarks.
Thetford, England	July, 1864	Dr. J. S. Bristowe	Eighth Report Medical Officer of Privy Council.	Rags	32	17	
Godalming, England		do	do	do			7 epidemics, same place.
High Wycombe, England (Rye mills).		do	do	do			2 epidemics.
Tunbridge, England (Hampton mills).		do	do	do			
Tunbridge, England (Basted mills).		do	do	do			3 epidemics.
Guildford, England (Chilworth mills).		do	do	do			
Liphook, England (Stanford mill).		do	do	do			
Wells, England (Wokey mill)		do	do	do			
Slough, England (Poyle mill)		do	do	do			
Slough, England (mill not named).		do	do	do			
Marlow, England (Temple mill)		do	do	do	5		
Marlow, England (not named)		do	do	do			
Ivy Bridge, S. Devon., England (Allen paper mills).	Dec., 1886	Dr. Parsons	Report Medical Officer, Local Government Board, 1886.	Soiled linen rags			Following outbreaks, same cause and place.
Do	1881	do	do	Rags			Do.
Do	1883	do	do	do			Do.
Do	Feb., 1884	do	do	do			Do.
Do	Apr., 1884	do	do	do			
Iping, England (blotting-paper mill).	May, 1882	do	do	do			2 epidemics.
Do	May, 1883	do	do	do			Disease spread from this mill to three separate villages.
Exeter, England (Hele paper mill).	Aug., 1883	do	do	do			
Wooburn, England (Bucks)	Mar., 1885	do	do	do			
Wooburn, England (another mill).	Feb., 1885	do	do	do			
Wooburn, England (Glory mill)	Mar., 1886	do	do	White linen rags			
Do	1886	do	do	Rags			
Hollingbourn, England	1883	do	do	do			
Maidstone, England	1882	do	do	do			
Do	1883	do	do	do			Same mill and room.
Do	1885	do	do	do			Do.
Derby, England (paper mill)	1882	do	do	do			

SMALLPOX—Continued.

Locality.	Date.	Authority.	Publication.	Origin.	Cases.	Deaths.	Remarks.
Wakefield, England	1881	Dr. Parsons	Report Medical Officer, Local Government Board, 1886.	Rags			Dr. Ruysch also reports 2 epidemics of that date and place.
Kent, England (East Malling paper mill).	1884	do	do	do			
Do	1885	do	do	do			
Do	1886	do	do	Superior quality of rags.			
Ipswich, England	1882	do	do	Rags			
St. Mary Craig, England (paper mill).	1881	do	Eleventh Report, Medical Officer, Local Government Board, 1881-82.	Rags in stock more than 1 year.	25		This and following two distinct outbreaks, but victims all working on same rags.
Do	May, 1881	do	do	Rags	13		
Oakworth, England (Turkey mill).	June 9, 1881	do	Report Medical Officer, Local Government Board, 1886.	do			
Hollywell, England		do	Eleventh Report, Medical Officer, Local Government Board.	Best white quality rags.			
Hollywell, England (Greenfield mill).		do	do	Rags			
Shaftsbury, England		do	do	do			
Maidstone, England	1881	do	do	Clean white linen rags.	34		
Dunbar, Scotland			London Lancet, Dec. 31, 1881	Rag store			
New Cathcart, Scotland (paper mill).			British Medical Journal, Jan. 20, 1883.	Rags			
Glasgow, Scotland (paper mill)		Dr. Russell, Glasgow	London Lancet, Apr. 28, 1883	do			
Penicuick, Scotland			British Medical Journal, Dec. 19, 1885.	do	20		
Do	1881		do	do			Same mill and room as the preceding.
Montrose, Scotland			London Lancet, July 22, 1893	Flax from Russia	18		
Do	1886		do	do			
Aberdeen, Scotland (Woodside Rag Works).	1886	Dr. Farquarson	British Medical Journal, May 2, 1885.	Rags			
Leeds, England	Apr. 1, 1878	Joseph Coquereau	Thèse pour le Doctorat en Médecine. Paris, 1891.	do			
Stroud and Toadmore, England	1871	do	do	do			Widespread epidemic.
Canterbury, England	June, 1878		British Medical Journal, July 3, 1880.	do			
Do	1880		do	do	12		
Do	Apr., 1875		do	do	13		
Do	1879		do	do			

Bradford, England	1879	Dr. Butterfield	Annual Report on Health of Bradford, 1879.	do			
Ossett-cum-Gawthorpe, England.	Mar., 1878	do	do	do	30		Several persons in same room in mill, living widely separated, simultaneously taken.
Whittlesford, England	1873	do	do	do			
Do	1875	do	do	do			
Taunton District, England		Dr. Henry S. Alford	British Medical Journal, June 19, 1880.	Rags on premises 6 months.			
Abenheim, Rhenish Hesse	1880		British Medical Journal, June 5, 1880.	Rags			
Criel, Department of Oise, France.	July, 1878	Dr. Wm. M. Smith	Report on Disinfection of Rags (p. 12).	do		40	Spread to 20 communes.
Marseilles, France	1874	Dr. Ruysch	Report at a Congress of Hygiene, at The Hague, Holland, entitled Rags: A danger, national and international.	do	1017		117 rag shops in the city, 46 rag shops in 1 district; deaths in larger proportion there.
Barendrecht, Holland	1881	do	do	do			
Maestricht, Holland	1879	do	do	do			
Herde, Holland	1871	do	do	do			
Epe, Holland	1871	do	do	do			
Lyons, France		do	do	do			
Christiana, Norway		do	do	do			
Leipsic, Germany		do	do	do			
Osult		do	do	do			
Ossett, England	1880	Dr. Parsons	Report Medical Officer Local Government Board, 1885.	do			
East Ardsley, England			do	do			
Chalford, England	1875		do	do			
Brinscombe, England	1875		do	do			
Ghent, Belgium	June, 1890	U. S. consul, Ghent	Dispatch to U. S. Department of State, June, 1890.	do			
Do	1892	do	Dispatch to U. S. Department of State, Apr. 8, 1890.	do			Writer also refers to previous epidemic.
Do	1892	do	Dispatch to U. S. Department of State, June 14, 1892.	do		44	This epidemic lasted many months.
Plainwell, Mich		Dr. Thompson, health officer, Plainwell.	Report State Board of Health, Michigan, 1882, page 392.	do			
West Springfield, Mass			Fifth Annual Report Massachusetts State Board of Health, page 548.	do			
West Kent, England		Dr. C. O. Baylis	Fifth Annual Report Connecticut State Board of Health.	do	40		3 outbreaks.
Manchester, Conn			Report Connecticut State Board of Health, 1883.	do			
Windsor Locks, Conn			do	do			2 outbreaks in same year.
Spring Mills, Pa. (Hamilton Paper Mill).	Apr., 1885	Dr. Wm. B. Atkinson	First Annual Report Pennsylvania State Board of Health, page 218.	do			

SMALLPOX—Continued.

Locality.	Date.	Authority.	Publication.	Origin.	Cases.	Deaths.	Remarks.
Spring Mills, Pa. (Hamilton Paper Mill).	Sept., 1885	Dr. Wm. B. Atkinson	First Annual Report Pennsylvania State Board of Health, page 218.	Rags			
Adams, Mass			Fourth Annual Report Massachusetts State Board of Health, page 468.	do	34		
Blackstone, Mass			do	do	10		
Cummington, Mass			do	do	19		
Dighton, Mass			do	do	17		
Fitchburg, Mass			do	do	25		
South Hadley, Mass			do	do	8		
Holyoke, Mass			do	do	32		
Huntington, Mass			do	do	3		
Lee, Mass			do	do	15		
Montgomery, Mass			do	do	6		
West Boylston, Mass			do	do	1		
West Springfield, Mass			do	do	16		
Dalton, Mass			do	do	6		
Bernardston, Mass			Third Annual Report Massachusetts State Board of Health.	do			
Holyoke, Mass			do	do			38 cases in Holyoke in 1882.
Deerfield, Mass			do	do			
Turners Falls, Mass			do	do			
Northampton, Mass			do	do			
Holyoke, Mass. (Holyoke Paper Company's Mill).	Mar., 1887	Dr. Withington	Nineteenth Annual Report Massachusetts State Board of Health.	do			
Huntington, Mass. (Chester Paper Company).	Apr., 1887	do	do	do			
Dalton, Mass. (Weston Paper Mill).	do	do	do	New rags			
Westfield, Mass	May, 1887	do	do	Rags			
Neenah, Wis		Dr. E. L. Griffin	First Annual Report Wisconsin State Board of Health, 1876.	do			
Menasha, Wis		do	do	do			
Do	Dec., 1876, to May, 1877.	Dr. J. R. Barnett	Second Annual Report Wisconsin State Board of Health, 1877.	do	70		
Do	May to Dec., 1877.	do	do	do			

Neenah, Wis	Nov., 1876–77.	do	do	do	20		Dr. Kempster personally knows of 2 other outbreaks occurring at Neenah a year or two later.
Watertown, N. Y		Dr. F. B. A. Lewis	Boston Medical and Surgical Journal, vol. 1, 1875.	do	40	14	Some cases appeared to be scarlet fever.
Massachusetts			Fifth Annual Report Massachusetts State Board of Health.	do			
Warren Township, Mich	Feb.-May, 1877.	Dr. Wm. Symonds	Report Michigan State Board of Health, 1878.	do	23		
Ypsilanti, Mich		Dr. E. Batwell	National Board of Health Bulletin, vol. 1, No. 44, May 1, 1880.	do			
Massachusetts		Dr. Chas. F. Withington	Eighteenth Annual Report Massachusetts State Board of Health, page 48.	do			At least 33 distinct outbreaks reported.
		Dr. Napias	Manuel d'Hygiene Industriel	do			
Germany		Lewy Bros., Berlin	Pamphlet "The danger of cholera from the rag trade."	do	5		Replies numbered in pamphlet No. 51.
Do		do	do	do	1		Replies numbered in pamphlet No. 52.
Do		do	do	do	5 or 6		Replies numbered in pamphlet No. 53.
Do		do	do	do	1	1	Replies numbered in pamphlet No. 141.
Do		do	do	do	28		Replies numbered in pamphlet No. 142.
Do		do	do	do	1		Replies numbered in pamphlet No. 296.
Austria		do	do	do			Replies numbered in pamphlet No. 24.
Do		do	do	do			Replies numbered in pamphlet No. 30.
Herisau, Switzerland		do	do	do	6		Replies numbered. No. 3.
England		do	do	do	3		Replies numbered. No. 126.

INFLUENZA.

Germany	1891	Lewy Bros., Berlin	Pamphlet, Danger of Cholera from the Rag Trade.	Rags			Replies numbered. No. 54.
Do		do	do	do			Replies numbered. No. 144.
Do		do	do	do			Replies numbered. No. 284.
Austria		do	do	do			(Two epidemics). No. 28.
"Belgium or France"		do	do	do	10		No. 100.

HADERNKRANKEIT—RAG-SORTERS' DISEASE.

Locality.	Date.	Authority.	Publication.	Origin.	Cases.	Deaths.	Remarks.
Germany		Joseph Coquereau	Thése pour le Doctorat en Medecine. Paris, 1891.	Rags			
Gloggnitz, Austria		do	do	do			14 deaths in 1 year.
Ligat		Dr. Schulz	London Medical Record, Dec. 15, 1886.	do	12	6	
Bradford, England	Oct., 1890.	Samuel Lodge, jr., M. D	Medical Press and Circular, London, Oct. 7, 1891.	do			
Styria, Austria			Ziemssen's Cyclopaedia, vol. 3, page 407.	do			
	1870	Dr. Prater	Sanitary Record of London, July 15, 1887.	do	16	16	
	1874-1880	do	do	do	12	12	
Austria		Lewy Bros., Berlin	Pamphlet, The Danger of Cholera from Rag Trade.	do	10	1	Replies numbered. No. 22.
Do		do	do	do	"A few."		Replies numbered. No. 25.
Do		do	do	do	27	27	Replies numbered. No. 26.
Do		do	do	do	2		Replies numbered. No. 27.
Do		do	do	do		"3 or 4."	Replies numbered. No. 28.

SCARLET FEVER.

Locality.	Date.	Authority.	Publication.	Origin.	Cases.	Deaths.	Remarks.
Wooburn, Bucks, England		Dr. Parsons	Report Medical Officer, Local Government Board, 1886.	Rags			
Bath, England	1882	do	do	do			Victim, a child of a rag sorter.
East Sussex, England		Joseph Coquereau	Thése pour le Doctorat en Medecine. Paris, 1891.	Rag-dust "détritus des chiffons."			Used as a fertilizer on fields.

ERYSIPELAS.

Locality.	Date.	Authority.	Publication.	Origin.	Cases.	Deaths.	Remarks.
Germany		Joseph Coquereau	Thése pour le Doctorat en Medecine. Paris, 1891.	Rags			Dr. Finkelnburg also reports this disease as certainly communicated by rags.

TYPHUS FEVER.

Morley, England	1880	Dr. Parsons	Report Medical Officer, Local Government Board, 1885.	Rags			Typhus fever unknown in this district.
Leeds, England	1880	do	do	do			
Wormerveer, Holland	1866	Dr. Ruysch	Report at Hygienic Congress, The Hague, Holland, entitled Rags: A Danger National and International.	do			
"Belgium or France"		Lewy Bros., Berlin	Pamphlet, The Danger of Cholera from the Rag Trade.	do			Reply numbered. No. 52.

TYPHOID FEVER.

Massachusetts		Dr. Withington	Eighteenth Annual Report, Massachusetts State Board of Health.	Rags			

SEPTICEMIA.

East Kent, England	Apr. 29, 1877	Joseph Coquereau	Thése pour le Doctorat en Medecine. Paris, 1891.	Rag dust	4		Used rag dust as a fertilizer on soil.

FLOCK COUGH.

Germany		Joseph Coquereau	Thése pour le Doctorat en Medecine. Paris, 1891.	Rags			Found by the commissioners also at Riesa, Germany.

CHOLERA.

Pilburg, Holland	1886	Dr. Ruysch	Report at a Congress of Hygiene, The Hague, Holland, entitled Rags: A Danger National and International.	Introduced by a rag-picker.			
Kriegstetten, Switzerland		Dr. Geo. M. Sternburg, now Surgeon-General, U. S. Army.	New York Medical Journal, Aug. 29, 1885.	Rags	17	11	
Eberswalde	1886	Lewy Bros., Berlin	Pamphlet, Danger of Cholera from Rag Trade.	do	10	5	Replies numbered. No. 1.
Malmedy	1852	do	do	do	"5 to 8"	"2"	Replies numbered. No. 10.

CHOLERA—Continued.

Locality.	Date.	Authority.	Publication.	Origin.	Cases.	Deaths.	Remarks.
Calbe Saale	1873	Lewy Bros., Berlin	Pamphlet, Danger of Cholera from Rag Trade.	Rags	1	1	Replies numbered. No. 25.
Berlin	1866	do	do	do	1	1	Replies numbered. No. 27.
Eberswalde	1873	do	do	do	3	2	Replies numbered. No. 35.
Glauchau	1866	do	do	do	2	2	Replies numbered. No. 43.
Koenigsberg	1866-1873	do	do	do	1	....	Replies numbered. No. 27.
Hamburg	1892	do	do	do	1	1	Replies numbered. No. 241.
Posen	1866	do	do	do	1	1	Replies numbered. No. 274.
Arnau	1852	do	do	do	5	....	Replies numbered. No. 11.
St. Petersburg	1860-1892	do	do	do	136	22	Replies numbered. No. 20.
Saratoff	1892	do	do	do	2	....	Replies numbered. No. 46.
Samara	1892	do	do	do	1	....	Replies numbered. No. 47.
Papiermühle, Germany	Sept., 1893	Prof. Dr. Doenitz, Germany, University of Bonn.	Abstract sanitary reports Oct. 6, 1893, U. S. Treasury Department.	do	14	6	Epidemic not suppressed Sept. 12, 1893.

Total number of epidemics reported, 206; total number of epidemics in the United States, 74.

As long ago as 1865 Dr. J. S. Bristowe was directed by the local government board of England to examine into reported cases of smallpox among employès in paper mills, and in the eighth report of the medical officer of the privy council, 1865, he makes the following statements:

In July, 1864, an epidemic of smallpox commenced in Thetford, which lasted for six or seven months, causing 16 or 17 deaths. There had been no smallpox in the village for some years previously; and the first cases occurred in the persons of two women engaged in sorting and cutting up some foreign rags. The disease appeared in both women on the same day, although they were not living together. The next case at the same place was that of a boy working in the engine room of the mill, but who had been in communication with the rag-workers. Dr. Minn, the surgeon of the parish, gave the information to Dr. Bristowe, and informed him that in all there were 32 cases emanating from the women first taken ill. The same report mentions an epidemic of smallpox at Godalming, and upon investigation Dr. Bristowe learned that there had previously been seven distinct epidemics which originated among the rag sorters and cutters in the mill at that place.

Dr. Bristowe states further that he found two epidemics of smallpox had occurred at different times in the Rye Mill at Highwycombe, each of which originated among the ragworkers of the mill.

In the Hampton Mills at Tunbridge an epidemic of smallpox occurred which originated in the sorting room, caused by infected rags. At the Basted Mills in the same place he found that smallpox had occurred three separate times, originating in the same manner.

At the Chilworth Mill, Guildford, there was an outbreak of smallpox which originated in rags; and at the Stanford Mill, Liphook, an epidemic occurred traced directly to rags used in the mill. At the Wokey Mills, near Wells, Dr. Bristowe reports an outbreak of smallpox traced directly to the rags; and at the Poyle Mills near Slough, there was an epidemic caused by infected rags, the first cases occurring among the sorters. Dr. Bristowe says (mill not mentioned): "Mr. Barnard, upon opening a bag of rags, noticed a disagreeable odor, and fourteen days thereafter was seized with smallpox. He recognized the same odor when the scabs were falling from his body that he had noticed when opening the bag. There were no previous cases of smallpox at the place. A female ragsorter took smallpox at the Temple Mills, Marlowe; four others had it at the same time, all five being engaged in sorting dirty London rags. There were no previous cases of smallpox in the village." He also reports the case of another rag-sorter who recognized the smell of smallpox in a bale of rags opened at another time, and shortly thereafter she was taken with the disease. There was no smallpox in her neighborhood at the time.

These cases were reported in 1865, before the subject had obtained the importance since given to it. It is valuable, however, for one thing. The record shows that nearly thirty years ago those who had investigated the subject demanded the proper disinfection of rags as a protection to the working people. The same thing is being urged to-day.

In the report of the medical officer of the local government board for 1886, Dr. Parsons, the medical officer, reported an outbreak of smallpox from infected rags at Ivy Bridge, South Devon, at the paper mills of Messrs. Allen at that place. There were no previous cases in the village, and the women first attacked were engaged in the sorting room; the rags were soiled white linen (underclothing, bed linen, handkerchiefs), and three girls working upon these rags were taken simultaneously. There had been, said Dr. Parsons in this report, several other similar outbreaks in the village which had been traced to the same cause, emanating from the same place; one in 1881, another in 1883, in February, 1884, in April, 1884, and the next, the one of which he then wrote, December, 1886. Each one of the epidemics was reported to him by the local health officer of the district. After careful personal examinations made by them they traced the origin of the disease to the sorting or cutting room of the paper mill located in the town. The disease had not existed there previously. From the same report the following outbreaks are noted: A second epidemic occurred in May, 1882, at the blotting-paper mill of Warren & Co., Iping, Sussex, reported by Dr. Kelley, medical officer of health, West Sussex. Two rag-sorters were taken ill at the same time. They lived some miles apart, but both were sorting from the same bale of rags when taken. There were no other cases of the disease previously existing in that place. Another outbreak occurred in the same mill, reported by the same health officer in May, 1883, six sorters having been taken ill with smallpox between the 7th and 11th of May. There were no previous cases in this part of the country nor in the adjoining territory, but the disease spread from this mill to three separate villages.

In August, 1883, an outbreak of smallpox at Hele paper mill near Exeter was reported by Mr. Dickinson, medical officer of health, 4 cases appearing simultaneously among the sorters who were working on rags from Russia, which they said had an offensive smell; no previous cases in the place.

The next outbreak reported by Dr. Parsons was at Woburn, Bucks, in March, 1885, emanating from the sorting room, the sorters being at work on rags from Russia and Germany; there was no smallpox anywhere about. There was at this same mill one case of malignant scarlet fever. The disease and death were certified as being due to sorting rags in this same room. There were no other cases of smallpox or scarlet fever at that time. At another mill in the same place there was an outbreak of smallpox in February, 1885, the girl first attacked complaining that the smell of rags had made her ill.

Another attack occurred in the Glory Mill, Woburn, in March, 1886, first appearing among girls working in the sorting room. The rags were white linen, not particularly dirty. The first cases taken were working at separate tables, but on the same rags. In April, 1886, another outbreak occurred in the same mill among the rag-sorters, all evidences of the previous outbreak having ceased to exist some time before. The next outbreak reported occurred at the paper mill in Hollingbourn in 1883 among the sorters in the mill. The smallpox was traced to some rags received from Russia; no previous smallpox in the place.

The next cases reported by Dr. Parsons occurred at Maidstone, the facts being communicated by Mr. Adams, health officer; the outbreak occurring among the rag-cutters in that place in 1882, and he reported similar outbreaks in the same room in the same place in 1883 and in 1885. In one of these outbreaks eight girl sorters were taken with the disease in three days, and a few days later three more women in another room, to which the same rags had been carried, were taken with the same disease. He said the rags were "clean white."

The next outbreak reported was communicated by Mr. Iliffe, medical officer of health of Derby; smallpox breaking out in the paper mill there in 1882; no smallpox previously in the place, and the person had not been away.

In Wakefield rural district Mr. Francis H. Wood and Dr. Wade, of Wakefield, health officers, report the epidemics of smallpox occurring at Wakefield originating at the paper mills among rag workers, in both cotton and woolen rags. The disease first appeared among the rag sorters; no previous cases existing at the time. In April, 1885, Mr. Francis Wood reports an outbreak of smallpox at East Ardsley, originating in a rag mill at that place; the rags were supposed to have come from London.

Dr. Butterfield, health officer of West Kent, reports an outbreak of smallpox in 1885 among the rag sorters at Eastmalling Paper Mills, Kent. Smallpox was contracted among the rag sorters and cutters in this mill on three different occasions in 1884, 1885, and 1886. In the last outbreak five women were taken ill; on February 9, while at work upon rags from London which were described as of "superior quality."

In the report of the medical officer of the local government board of 1885 Dr. Parsons states that in 1880 an epidemic of smallpox occurred at Ossett, the first case occurring in a rag sorter, and proved to be the starting point of a local epidemic, the district having been previously free. Mr. Greenwood, medical officer of health at that place, reports other cases produced in the same manner prior to this one; and he also states that the people who work among rags are liable to contract the itch.

Dr. Elliston, medical officer of health, Ipswich, reported to Dr. Parsons an outbreak of smallpox in the winter of 1882 and 1883, which had its origin among the workers in the mill at that place while they were engaged upon white rags.

Mr. Harper, medical officer of health, Bath, reported in 1882 an outbreak of scarlet fever raging there that year, the first case attacked being a child whose father was employed in the paper mill at that place; no previous cases in the district.

Dr. Parsons describes an outbreak of smallpox in April, 1881, at St. Mary Cray paper mills, where there were 25 cases between April 16 and April 23, all sorters at work on rags which had been in stock for more than twelve months. There were 13 more cases subsequently (in May, 1881), 38 cases in all: and all worked upon the same rags.

Another outbreak occurred at Turkey Mill, Oakworth urban sanitary district, June 9, 1881, occurring among rag sorters working upon "foreign rags;" no previous cases in the district.

At the paper mills at Hollywell rural sanitary district an outbreak of smallpox occurred among girls employed sorting rags, "best white quality;" no previous cases.

At another mill in the same place the same officer of health reports an outbreak of smallpox among the rag sorters in the Greenfield Mills.

The next outbreak reported by Dr. Parsons occurred at Shaftsbury. The first case of smallpox was a woman engaged in sorting rags; the rags were said to have been gathered in places where smallpox was known to exist.

Mr. Adams, medical officer of health at Maidstone, reported an attack of smallpox occurring at that place in 1881, which originated among the girls sorting rags, 11 of whom were taken sick with smallpox at one time; in all there were 34 cases. The rags were "clean, white linen," nothing to show that they came from filthy sources.

Mr. Steel, medical officer of health at Morley, reports to Dr. Parsons a case of typhus fever in 1880, having its origin in infected rags. The man attacked was a rag sorter. At the same time several cases of typhus fever had occurred at Leeds, which were believed to be due to infected rags. These rags were woolen, used n the manufacture of shoddy. Typhus fever is never known in this district.

In the London Lancet, December 31, 1881, an outbreak of smallpox is mentioned as occurring in Dunbar, Scotland. The first case was that of a woman who worked in a "rag store." No previous cases.

The British Medical Journal, January 20, 1883, reports an outbreak of smallpox occurring at a paper mill in New Cathcart, among the rag cutters at that place. The disease was especially virulent. The rags came from Koenigsburg.

In the London Lancet, April 28, 1883, Dr. Russell, of Glasgow, reports an outbreak of smallpox in a paper mill at that place among the rag cutters, and it was entirely limited to them. The disease was traced directly to foreign rags which they were engaged in cutting.

The British Medical Journal, December 19, 1885, reports an outbreak of smallpox at Penicuik, near Edinburgh, a village engaged in paper making. Twenty cases occurred during the outbreak, the origin of which was traced directly to the rags. The report refers to a similar outbreak in the same place among work people in the same room in 1881.

London Lancet, July 22, 1893, reports smallpox introduced into Montrose, Scotland, from Russia, by means of infected Russian flax, the disease first appearing among those who handled the flax. There were 18 cases in all, and the reporter states that a similar attack with regard to its outbreak occurred there seven years before.

In the British Medical Journal of May 2, 1885, occurs the following:

"The Woodside rag works at Aberdeen, where the outbreak of smallpox among the workers was the subject of the question by Dr. Farquarson, on April 23, have repeatedly been the scene of outbreaks of smallpox, and it would be worth while therefore that some special inquiry should be made as to the precautions adopted by the proprietors for preventing such occurrences in the future.

"Inquiry as to the outbreaks at Aberdeen was made in the House of Commons, and the lord advocate in response to questions said that investigation showed that smallpox had broken out at these mills on more than one occasion and that the infection had been traced to rags imported from abroad as well as to rags collected in that country."

Dr. Goldie, of Leeds, England, reports an epidemic of smallpox at that place in 1878, commencing among the rag sorters, the first case occurring April 1. Other cases were taken shortly afterwards, all having been engaged on the same rags, and from them the disease spread through the city. Previous to this there had been no cases in the place.

Another epidemic is reported by Dr. Partridge, health officer of Stroud, in 1871, the work people in the establishment at Toadmore being the first affected, and from them the disease became epidemic and widespread.

The same gentleman reports an outbreak of smallpox in 1875, at which time it occurred in two mills, Chalford and Brinscombe, originating from infected rags. The disease assumed a severe form.

The British Medical Journal, June 5, 1880, reports as follows:

"An epidemic of smallpox which spread somewhat widely broke out at Abenheim, in the Canton of Worms, Rhenish Hesse. The first patients were five women who worked in a rag factory cutting up and sorting rags. The cases were investigated, and it was found that a portion of these rags came from Marseilles, where smallpox prevailed to a serious extent."

The British Medical Journal, July 3, 1880, contains the following:

"It seems to be the commonest of experiences in the existence of smallpox in the city that it should appear in the person of the rag-worker.

"In April, 1875, a girl from the local rag factory was attacked with smallpox and conveyed the infection directly or indirectly to 12 other persons, several of whom died. In June, 1878, there were two cases of smallpox in the city of Canterbury, the second of which caught the disease from a woman who contracted the disease at this factory; and in 1879 another outbreak appeared, the first patient being a rag-sorter at the same mill, who was engaged in sorting very dirty and offensive rags."

Dr. Butterfield, in his annual report on the health of Bradford, wrote:

"No case of smallpox had occurred in the borough for many months, when a girl who had not left the neighborhood was taken sick, and in a few days another young woman employed in the same work, rag-sorting, exhibited the same disease."

Dr. Butterfield reports that "in March, 1878, several persons residing apart, but working in the same room at the same mill at Ossett-cum-Gawthorpe, were simultaneously affected with smallpox, the origin of which was traced to rags which they were engaged in sorting, and from these people it spread to 30 others."

At Whittlesford in 1873 and 1875 there were two outbreaks of smallpox occurring among rag-sorters which were traced to rags upon which they were engaged.

The British Medical Journal of June 19, 1880, contains a report made by Dr. Henry S. Alford, health officer of the Taunton district, of an epidemic of smallpox in the town, in which he states that the disease was communicated "by rags that had been on the premises six months and were obtained from Russia or Wales. No cases had occurred in the village nor had the girls first attacked left home. They were sorters in the paper mill living apart. The epidemic appeared at the same time in two places at least 2 miles apart. Investigation showed that the persons in whom the disease first appeared were all employés in the same mill." Dr. Alford says, as a result of his investigation, that the disease originated in the rags at the paper factory, some of them being in a very filthy condition; and he adds: "I have little doubt that in many cases of infectious diseases, especially in those which end fatally, the clothes, soiled, filthy, and poisonous as they are, are sold to the rag dealer without any disinfection whatever, and so become the focus of disease in distant parts of the country or even in distant countries."

Dr. William M. Smith, medical health officer of the port of New York, in a report published by him upon the disinfection of rags, on page 12 states as follows:

"About July, 1878, five sorters of rags working in the warehouse at Criel, France, were attacked with smallpox. They conveyed the disease to their relations and neighbors. Their soiled clothing infected the proprietor and workers in a floating laundry."

The course of the epidemic could be followed from its point of origin to twenty communes. The deaths at Criel, Montataire, and Nogent were 22, and in the arondissement 40. This epidemic was investigated by Dr. Beursier, member of the council of hygiene, and by him ascribed to "the propagation of variolous virus by the rags."

In a work entitled Thése pour le Doctorat en Medicine L'Etude de la Des-infection des Chiffon, by Joseph Coquereau, Paris, 1891, the following cases are reported:

Dr. Frissell, medical officer of health, East Sussex, England, reports the case of a man who was spreading rag dust (detritus des chiffons) upon the soil as a fertilizer. This man was attacked by a scarlet fever, there being no such disease in the vicinity and the man had not been away from home.

The same author says that Prof. Finkelnburg made investigations among the rag people employed in the rag business in Germany, and says that "the transmission of erysipelas by rags is beyond question."

The same authority (Joseph Coquereau) relates that Dr. Robinson, medical officer of health, East Kent, England, on April 29, 1877, reported four men attacked by septicemia. They lived at some distance apart, but were engaged in the same work, that of spreading the dust from rags upon the soil. (Rag dust is used as a fertilizer near some of the largest paper-making establishments in Europe.) One of the men told the doctor that he had a habit of scratching the ear which was first affected. All had the usual symptoms of septic fever, one of the men, who was severely attacked, having carried the fertilizer from the station to the ground. In the same report Dr. Coquereau alludes to what he there calls "flock cough" (which we also found at the establishment in Riesa). He describes it as a peculiar cough attacking rag-sorters, characterized by catarrh, chills, dyspnœa, cough, exaggerated sensibility of the thoracic organs. The malady is not fatal, and if work is persisted in may disappear, but if work ceases for a time the symptoms disappear, to return when work is resumed.

The same author says: "Latterly a disease has been described which was found to exist among the rag-sorters in Germany and now known by the name of 'hadernkrankeit,' which has been thoroughly investigated by Dr. Niederfrininger and

Prof. Finkelnburg, of Bonn, and Inspector-General Dr. Nigerka, who reported the conditions found at the congress in Vienna in 1887. The investigations of these physicians show that the disease has peculiar symptoms and that it may be described as an internal anthrax. The disease affects the lungs, producing œdema, and death at the expiration of four days, often after thirty hours; the disease is found only among rag-sorters."

The same thesis quotes the report of Dr. Levy, who described a disease found only among those who were sorting white rags. In one factory in Gloggnitz, Austria, there were 14 deaths from this disease in one year. Autopsy revealed œdema of the lungs, and the symptoms during life all pointed to the lungs as the seat of the disease. The rooms where these rags are torn are full of dust, which makes breathing difficult for the uninitiated. The doctor states that the white rags, being generally remains of sheets, shirts, and garments directly in contact with the skin, are more liable to contain the germs of disease, and consequently render those who handle them more likely to be contaminated by disease germs. Dr. Levy further states that the working people should be warned of the danger of inhaling the dust to which they are exposed, because of the liability to the disease. The sorting room should be thoroughly ventilated, and sleeping, eating, or drinking water should be prohibited in this room. He further insists that the rags must not be kept in damp places, where the germs are liable to thrive, and insists that they should be disinfected in some manner so as to destroy the germs. The views entertained by Dr. Levy are likewise insisted upon by such eminent medical men as Emile Beck and Skvreczka, of Berlin; by Vacher, Wolffhugel, and Quist, of Helsingfors; and Prof. Finkelnburg, of Bonn; Profs. Koch, Pasteur, Tyndall, Richter, and Ruysch.

The London Medical Record, December 15, 1886, prints the following report from Dr. Schultz to the Riega Medical Society:

"May 7, 1886, an outbreak of rag-sorters' disease, 'hadernkrankeit,' appeared in a paper mill in Ligat among women rag-sorters. Five were attacked in one day, and all died. Three days later 7 more were taken with the same disease, and one died."

Dr. Schultz subsequently made an inquiry into the whole circumstance conjointly with Drs. Kranhalls, Heerwagen, and Radecki, and they jointly pronounced the disease "hadernkrankeit," ascribed by Kolb and Frisch to the anthrax contagium and communicated to these women from infected rags. Dr. Kranhalls injected some of the transudation from one of the patients into a rabbit and caused the death of the animal. The œdema fluid taken from the animal was filled with the characteristic bacillus which was found in the patients afflicted with rag-sorters' disease. The cultivation experiments made with this fluid after Hesse's method showed that the microbe obtained was endowed with the same peculiarities in its growth as those described by Hesse. The necropsy corresponded with the descriptions given by Koch, Gaffky, and Hesse, being such as are found in the persons of those dead of rag-sorters' disease. Dr. Kranhalls says that the Koch bacillus of malignant œdema represents the pathogenic microbe of rag-sorters' disease.

In the Medical Press and Circular, London, October 7, 1891, Samuel Lodge, jr., M. D., reports a case of rag-sorters' disease, the broncho-pulmonary form of anthrax (hadernkrankeit) which occurred under his observation, as follows:

"In October, 1890, we had a case of broncho-pulmonary anthrax. The patient was a female rag-picker aged 35, who worked in a rag warehouse in Bradford. Her duty was to tear up old clothes into rags. We were permitted to remove from under her bench as much dust as we wished, and with the assistance of Dr. R. Wurtz, of Paris, the presence of the spores of anthrax in the dust was demonstrated. * * * The bacteriological, historical, and experimental proofs were altogether dicisive and left nothing to be desired. From an intimate knowledge of the condition of warehouses generally we may say that they are usually badly ventilated and lighted, are rarely ever swept or whitewashed, and no precautions are taken as to the ultimate disposal of the dust, or as to the washing of the hands before meals, or eating in the workroom."

He says, further, that the rag merchant before being permitted to store the rags "should procure a certificate from a disinfecting official that the rags have been in a steam pressure disinfecter, at a temperature of at least 120° C. Before tearing up the rags they should be moistened and then torn over a trellis hurdle, connected with some apparatus to carry away the dust from the table, and this should be burned at once."

In Ziemssen's Cyclopædia, vol. 3, page 407, is the following:

"Kolb reports several cases of inocculation of anthrax by means of rags which were used in a paper factory in Styria. Among the 30 to 35 hands of a paper factory, Dokahl during the course of four or five years, treated 11 cases of malignant pustule due to the above cause and terminating fatally in from forty to forty-two hours."

The Sanitary Record, of London, July 15, 1887, contains the following, relating to rag-sorters' disease or hadernkrankeit:

"Dr. Prater observed 16 cases of this disease in 1870, 12 more in 1874 to 1880, making a total of 30 cases, every one of which was rapidly fatal. It attacked only the women who were sorting rags and did not affect the others. An official report prepared concerning this disease says that this peculiar disease has previously been observed, but has been mistaken for pernicious pneumonia or some other affection of the respiratory organs. This is the same disease observed by Dr. Kranhalls, of Riga, in 1886. The report ends thus: 'Only the most stringent sanitary measures can prevent the outbreak of this almost in every case fatal disease. The sterilization of the rags by powerful disinfecting apparatus will prove to be the most efficient preventive.'"

In this connection it may be well to quote from a statement made in the Dictionnaire Encyclopédique des Sciences Medicales, vol. 16, page 29:

"The great number of cases of phthisis among the rag sorters and pickers of Paris admitted to the hospital as compared with the number seeking admission from among other persons of the same social grade, but having some other occupation, has long been noted; and the large proportion of deaths from lung difficulties among rag-pickers has also been remarked."

In the same volume Dr. E. Beaugrane mentions the observations of M. Oliver made among rag-pickers, saying that they had a form of disease characteristic, and producing alarming symptoms, which he sums up as indicating "a veritable intoxication of putrid matter producing severe types of disease."

In the Annales d'Hygiene Publique, 1879, vol. 2, page 480, may be found some of the symptoms of hadernkrankeit, as follows:

"The disease commences with weakness, anorexia, insomnia, vomiting, sensation of weight in the epigastrium, and on the second day, sometimes the third, one can see cyanosis of the lips, cheeks, and nails; cold sweats, œdema of the lungs, no disturbance of the brain. Generally death is easy, excepting in cases where there is pulmonary stasis; no abdominal symptoms and very rarely albumen in the urine.

"Unless careful, even critical examination is made of patients suffering from this form of disease, it might easily be mistaken for an attack of malignant pneumonia or pneumonia with typhoid symptoms, a disease to which rag-sorters are liable and which, until these investigations were made, was described and classified as pneumonia."

Dr. Ruysch, of The Hague, one of the foremost European sanitarians, made a report at the Congress of Hygiene at The Hague, in 1884, upon "Rags, a danger, national and international," from which the following extracts are made:

"Dr. Gibert's report on the epidemic of smallpox at Marseilles proves conclusively the great influence of rags on epidemics. In 1874 there were 117 rag establishments in Marseilles, of which 46 were in one district; in that district the number of dead from smallpox being three times larger than in any other. There were in all 1,017 cases of smallpox, and by far the larger proportion occurred in the rag-pickers' district."

He further states (in Revue d'Hygiene, July, 1879, page 596) "that smallpox and other infectious diseases have frequently been caused in Marseilles by the rag trade, inland and foreign, and by the sale of garments used by the sick."

In 1881 infected rags sent from Gouda caused an epidemic of smallpox at Barendrecht, Holland.

The origin of the smallpox epidemic in 1871 at Herde and Epe, Holland, the medical inspector attributed to rags. In 1886 a number of people who had been handling rags in a paper mill at Wormerveer were attacked with typhus fever.

An epidemic of smallpox in 1879 at Maestricht started among men who were working upon rags which came from Liege, where smallpox was epidemic at the time, there being no cases in Maestricht.

Similar reports on the propagation of smallpox by means of rags have been made concerning factories at Lyons. Christiana, Leipsic, and Osult. In the Sentinelle de la Sante, published in Leipsic, Dr. Oidtmann, reported, in 1887, that rags introduced into neighborhoods which came under his observation and which he investigated were the direct cause of epidemics of smallpox in those localities, and that by reason of the frequency of this disease from this cause he demands that old clothing and rags should be submitted to a very careful disinfection in order that disease germs may be destroyed.

Dr. Devillees, physician in chief to the railway companies of France, states that it has been his duty on several occasions to call the attention of the railroad companies to the dangers which result to the employés of the road through handling rags, which have on several occasions caused attacks of various contagious diseases.

"Recently, again, four employés have been attacked by eruptive diseases of a serious character contracted by handling bales of rags which they loaded on the cars; in one the disease resembled urticaria, eczema in another, and measles in the last two, and it has been the cause of an interruption of their labor for a period of from five to ten days, as well as subjecting them to the dangers of the disease. These diseases would not have taken place if the rags had been previously disinfected in a proper manner and properly packed."

It has never been satisfactorily determined how long the contagion of smallpox may be retained in old rags or cast-off clothing. The cases of smallpox that developed in 1873 in the hospital at Utrecht were traced to insufficiently disinfected bedquilts which had been infected by smallpox patients treated there in 1872.

Dr. Napias, in the Manuel d'Hygiene Industriel, relates several epidemics of smallpox breaking out among the workers manipulating infected rags.

Dr. B. Thompson, health officer of Plainwell, Mich., reports (State Board of Health, Michigan, 1882, p. 393) a case of smallpox contracted in the sorting room of the paper mill where the patient worked, and from this case the disease spread to other families in the place, becoming epidemic.

The Fifth Annual Report State Board of Health, Massachusetts, page 548, reports an epidemic of smallpox originating in the rag-picking room of one of the paper mills in West Springfield, which spread rapidly through the place.

Fifth Annual Report State Board of Health, Connecticut, prints the investigations of Dr. C. O. Baylis, West Kent, England, who reported three separate "sets of cases of smallpox, each set arising from the sorters and cutters in a paper mill located there. In all 40 cases originated from this source. When the rags from which these cases originated were disinfected the disease stopped."

The Report of the State Board of Health, Connecticut, for 1883, page 225, mentions epidemics of smallpox at Manchester and Windsor Locks; the infection being introduced by rags in each place. In Windsor Locks the disease broke out the second time in the same year.

The Seymour Paper Company have their manufactory at Windsor Locks, and import their rags from Egypt, where smallpox is always present. The report adds significantly: "This company has engaged the attention of sanitary authorities, both State and national, many times through their inattention to the laws concerning disinfection and vaccination." Many Egyptian rags are received at New Haven, New York, and Boston.

The First Annual Report of the State Board of Health, Pennsylvania, page 218, records an epidemic of smallpox at Spring Mill, which originated in the Hamilton paper mill, near that place. In 1885 there were two attacks—one in April, one in September. In examining into the cause of the outbreak Dr. William B. Atkinson, special medical inspector, says: "While examining the paper mill I regretted to find that there was no positive method by which the rags, both domestic and imported, could be completely disinfected."

These outbreaks have occurred notwithstanding the proprietors "employ a physician yearly to inspect and vaccinate all their people."

In the report of the Pennsylvania State Board of Health, 1886, may be found some interesting correspondence between the proprietors of the mills mentioned and the authorities of the State concerning some Japanese rags which were surreptitiously taken from a warehouse where they were stored. Their disinfection had been ordered by the authorities, but this had not been done, and the rags were taken by a roundabout way to their mill. When discovered, the proprietors agreed to introduce immediately some method of disinfection at their place.

In the Fourth Annual Report of the State Board of Health of Massachusetts, 1873, page 468, there is a table showing the number of cities and towns in that State which had epidemics of smallpox that year. The table gives the names of the cities and villages and the source of infection as established by thorough investigation, and is as follows:

City or village.	Cases.	Cause.	City or village.	Cases.	Cause.
Adams	34	Rags.	Lee	15	Rags.
Blackstone	10	Do.	Montgomery	6	Do.
Commington	19	Do.	West Boylston	1	Do.
Dighton	17	Do.	West Springfield	16	Do.
Fitchburg	25	Do.	South Hadley	8	Do.
Holyoke	32	Do.	Dalton	6	Do.
Huntington	3	Do.			

From these towns the disease spread to others; in some cases the source of infection was clearly traceable, but of course it was impossible to determine just how far-reaching the epidemic became. Numerous localities were infected, and how far the infection at these other places was chargeable to the infected rags can not be known.

This report was compiled by the State board of health in compliance with a resolution of the House of Representatives in 1873, instructing the board to inquire into the cause of the alarming proportions which the epidemic of smallpox had attained.

The Annual Report of the State Board of Health of Massachusetts, 1882, states as follows: "The disease, smallpox, now exists in Bernardston, carried from a paper mill in Holyoke; in Deerfield, carried by an operator from Turners' Falls, and in Northampton from the same source. Holyoke had 38 cases in 1882."

In the Nineteenth Annual Report of the State Board of Health, Massachusetts, page XVI, Dr. Withington reports 4 cases of smallpox originating in the sorting room of the Parsons Paper Company mills, in Holyoke, in March, 1887; and after a careful examination concludes that the women affected became so through the medium of the rags, but whether foreign or domestic he was unable to say, as both were being used.

He also investigated the outbreak of smallpox at Huntington in April, 1887, at the Chester Paper Company, where there were several cases, and he says that the rags were the medium of contagion, both domestic and foreign being used, some from Russia, some from Leghorn. His investigation at this mill induced the doctor to say, "a serious neglect on the part of the proprietors in their disregard of one of the important sanitary provisions of the statute" caused this outbreak (he does not state whether this is nondisinfection, nonvaccination, or both). The same month, April, 1887, another outbreak of smallpox occurred at Dalton, the victim being an employé of the Weston Paper Mill in that town, and the doctor says: "The rags used here were mostly new, such as collar cuttings and new linens. Some came from Leghorn which had been washed and disinfected before shipment."

From the same report another outbreak of smallpox is mentioned, occurring in Westfield in May, 1887, the origin of the infection being rags. This report says "that the statutes relative to vaccination and revaccination should apply with special force to paper mills, which from causes already shown are especially liable to outbreaks of smallpox among their operatives."

In the First Annual Report of the State Board of Health of Wisconsin for the year 1876, Dr. E. L. Griffin reports 3 cases of smallpox in as many different families, living in Neenah and Menasha; all were taken ill at the same time, and were employed in sorting rags at the paper mills, the disease being due to infection contained in the rags.

In the Second Annual Report Wisconsin State Board of Health, 1877, is the following:

"During the year ending September, 1877, the city of Menasha was visited by an epidemic of smallpox extending from December, 1876, to May, 1877, assuming in progress a severe form. During that period about 70 cases occurred with a proportion of deaths of 1 to 6. From May to December several more cases were reported, but no deaths, most of the cases assuming a mild form. The epidemic originated at the paper mills at Neenah, and the cases occurring in Menasha all sprung directly or indirectly from that source. The first two cases under the care of a physician came into my hands. They were young women 18 to 20 years of age who had been working in one of the paper mills at Neenah and had never been vaccinated.

"In Neenah the disease began in November, 1876, simultaneously with the outbreak in Menasha, and continued with short periods of intermission through the winter and well into the warm weather of the spring. During this time there were in this city 20 unmistakable cases, the mortality being light."

In the neighboring city of Menasha there are 70 cases, with a much larger proportion of fatalities. In both places the original source of infection was the paper mills.

Dr. J. R. Barnett, who attended many of these cases and who thoroughly investigated the whole subject, states that the rags came from abroad, and he uses this expressive language: "The bales thus sent out are infernal machines for the disseminating of zymotic poison."

One of the commissioners (Dr. Kempster) was personally cognizant of this epidemic, living but a short distance from there at that time, and was thoroughly familiar with the details of the outbreak as presented in the above report. There were two other outbreaks of smallpox originating in the same mills while Dr. Kempster was living near there, and of which he had personal knowledge, but the details of which are not at hand.

In the Boston Medical and Surgical Journal, vol. 1, 1875, Dr. F. B. A. Lewis, of Watertown, N. Y., reports as follows:

"Some rags had been received at the paper mills in this place from California. These rags were sorted by 21 girls in one large room, 7 of whom were attacked at about the same date.

"The superintendent of the room stated to the doctor that the rags were moist, and had a peculiar odor, and that among them were bandages, poultices, some entire articles of underwear stained as though from the persons of invalids. Some took the disease who worked in other parts of the mill but who came into the sorting room while these rags were being sorted. In all 40 cases occurred, and 13 or 14 died; some of the cases appeared to be scarlet fever."

The Fifth Annual Report of the Massachusetts State Board of Health, 1877, reports "smallpox originating in the rag-packing room of one of our paper mills and spreading rapidly, as the patients were not isolated."

The Report of the State Board of Health of Michigan, 1878, reports that William Symonds, M. D., health officer of Warren Township, gave the details of 23 cases of smallpox occurring between February 1 and May 17, 1877, the disease originating from the paper mills in that place.

The National Board of Health Bulletin, vol. 1, No. 44, May 1, 1880, contains a report from Ypsilanti, Mich., in which Dr. E. Batwell, health officer of the town, reports 2 cases of smallpox, the origin of which was in the paper mills located there. The patients were seized with smallpox at the same time, and several neighbors were exposed before the nature of the disease was made known.

Charles F. Withington, M. D., has a lengthy article in the Eighteenth Annual Report of the State Board of Health of Massachusetts, page 48, which states that in answer to a series of questions which he propounded to physicians residing in that State he received answers from 19, who stated that they knew of cases of smallpox having arisen from rags. "Two writers described each 3 distinct outbreaks, 4 described 2 epidemics, 5 others gave replies which indicate that they have known more than one outbreak of smallpox from rags, and the remainder, 9 in number, speak of a single epidemic originating in rags. Hence, we have in all at least 33, and probably more, distinct epidemics reported by these physicians, in which smallpox was transmitted by this channel." It is further shown that several of these epidemics came through foreign rags. One of the physicians, Dr. Andrew F. Reed, of Holyoke, said regarding the source: "The statement made that no cases came from foreign rags is not true." Dr. Best said: "Six cases of smallpox to my personal knowledge were from foreign rags."

As to whether rags convey other contagious diseases, Dr. Wilcox, of Ticonderoga, N. Y., said he knew of their having conveyed typhoid fever, and that this disease had been more common relatively among the rag-workers in the Ticonderoga paper mill than among other classes of people.

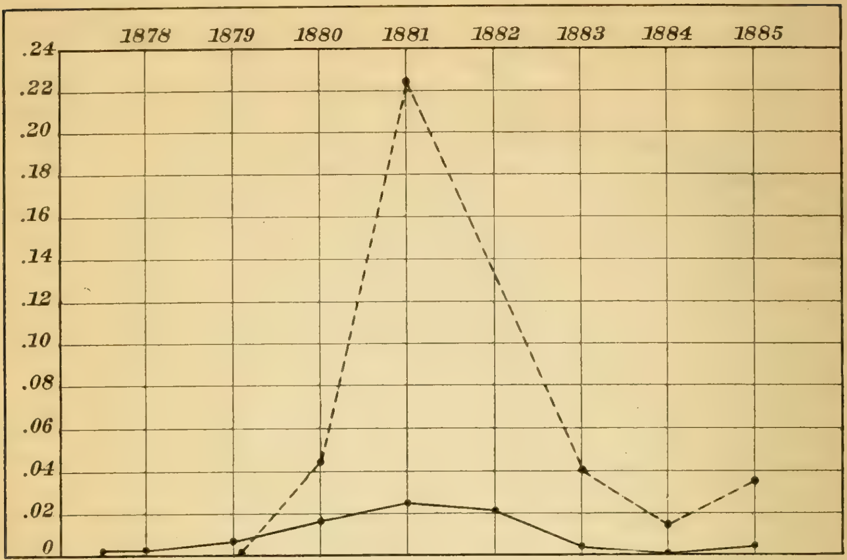
Dr. George D. Coleny, of Fitchburg, replied relative to diphtheria: "It is certain that in the epidemics of diphtheria occurring during the last six years, cases were more common in this class (rag-workers)."

Dr. J. W. Hastings, of Agawam, made the same reply as to scarlet fever (that it was much more frequent among sorters of rags relatively than in other classes).

Finally, Dr. Withington prepared a series of charts for several diseases, which are published in the same report, showing that for a period of eight years the mortality rates in the towns where rags are used in paper-making, contrasted with other towns in which rags are not used, is as follows:

SMALL POX, CHART NO. 1.

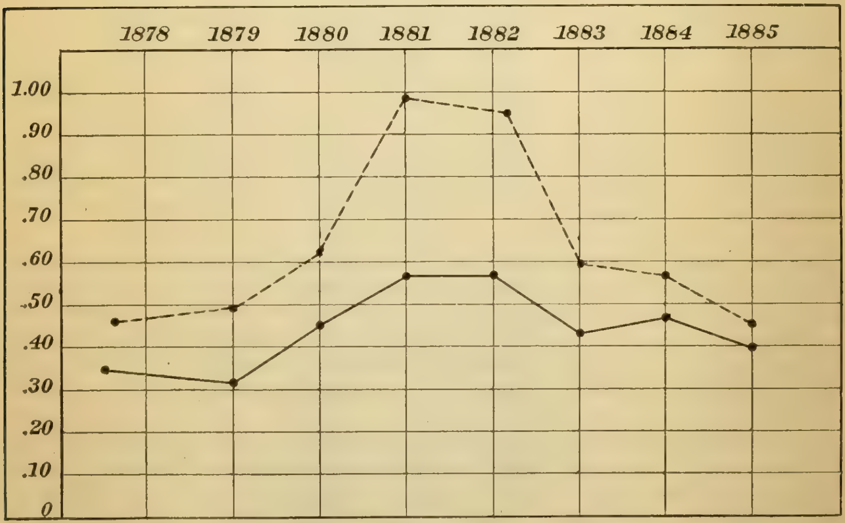
[Towns using rags indicated by the dotted line ; State at large the black line.]



Mortality rates, towns using rags			.0458	.2290	.1374	.0382	.0153	.0305	Annual average.
Mortality rates, State	.0015	.0041	.0196	.0242	.0232	.0026	.0015	.0096	

TYPHOID FEVER, CHART NO. 2.

[Towns using rags indicated by dotted line ; State indicated by black line.]

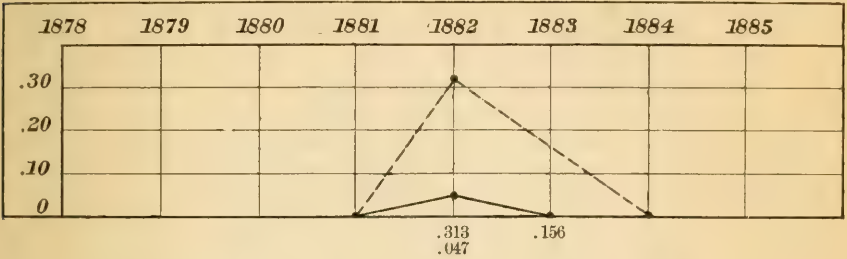


Mortality rates, towns using rags	.4580	.4809	.6183	.9923	.9466	.5725	.5572	.4427	Annual average.
Mortality rates, State	.3496	.3280	.4542	.5520	.5556	.4428	.4506	.3955	

The highest point of the wave lines is attained in 1881, and shows the relative mortality from smallpox and typhoid fever in rag-using towns, and is contrasted with the lower line, which shows the relative mortality of smallpox in towns where there are no rag establishments.

SMALL POX, CHART NO. 3.

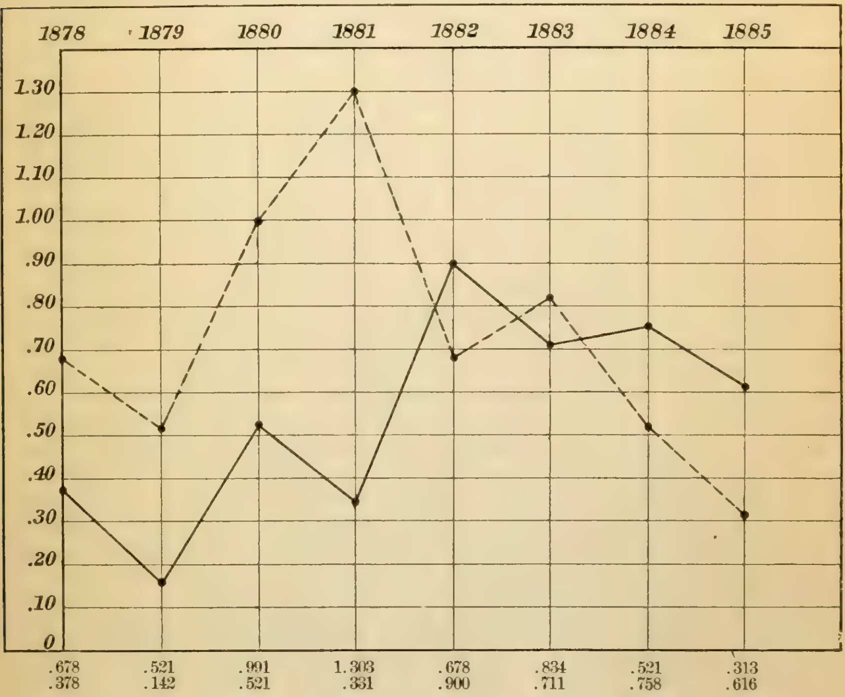
[Towns using rags indicated by dotted line; towns not using rags indicated by black line.]



Annual average .... { .058
.006

TYPHOID FEVER, CHART NO. 4.

[Towns using rags indicated by dotted line; towns not using rags indicated by black line.]



Annual average .... { .73
.557

To verify the charts Dr. Withington selected a group of towns in the State in which there were rag-using establishments, and contrasted them with another group of towns, having the same general topographic features, but which were not users of rags, or did not contain rag warehouses, but manufactured other articles which confined the operatives within the various establishments. Each group presenting conditions as nearly similar as it was possible to get them. The conditions are shown in charts numbered 3 and 4.

In these charts the upper line represents the relative mortality in each disease in the rag-using towns as compared with the mortality shown by the lower line in similar towns where no rags are used.

The charts demonstrate in the most conclusive manner the fact that in those towns in which are located the establishments using rags the various forms of disease charted are much more severe, and the mortality greater than in the towns where there are no rag establishments. These conditions coincide with observations made relative to the great rag centers in Europe where much the same conditions may be observed but which will be referred to later.

The frequency and persistence of epidemics of smallpox in European cities which contain receptacles for rags or manufacture them is a significant fact. The disease is very common in Ghent, and often severe; not infrequently it has been traced directly to those who handle or sort rags, as may be seen from the reports of the U. S. consul whose headquarters are at that place, and who has frequently reported epidemics of this disease to the State Department in his official dispatches. June, 1890, his dispatch of that date, states "that there is ground for believing that the malignant germs resulting in the present epidemic (of smallpox) are introduced by rags." In his dispatch dated April 8, 1892, he states, "I recently learned that an outbreak of smallpox here several months ago occurred exclusively among the workmen at the docks who had been employed in unloading old rags." On the 12th of April, 1892, he reported that there were then over one hundred cases of smallpox in the city of Ghent.

In his dispatch dated June 14, 1892, he states that the infection (smallpox raging there at that time) was introduced into Ghent through the medium of foreign rags, and that the epidemic broke out in the quarter of the town inhabited by workmen employed in unloading rags at the dock, and in this dispatch he alludes to another epidemic, at some previous time, attributable to the same cause.

In Antwerp the same thing has been noted; smallpox and typhoid fever being much more frequent than in other cities, similarly situated in the same country, which do not deal so extensively in rags.

In a table showing the number of deaths from smallpox, from March 4 to June 17, 1893, there were 108 deaths from smallpox in Antwerp. At Hanover, another large rag center, smallpox is much more frequent than in other cities of the same size, similarly situated in the same country, which are not rag centers.

The U. S. consul-general at Berlin, in a dispatch to the State Department, says: "There is actual danger wrapped up in every bale of rags which comes to our shores, and the only efficient way to disinfect them is to burn them."

In Egypt, Turkey, Asia, Greece, and generally throughout the countries bordering upon the Mediterranean, where we made investigations, we found that smallpox is never absent, and large quantities of undisinfected rags find their way annually into the United States.

Reports from England, already cited, show how often smallpox occurs in those establishments where rags are used, and the same thing may be said of places in the United States from which we have reliable reports, as, for instance, in Massachusetts.

It is not yet determined satisfactorily now long the virus of smallpox may remain active, but there are many well-authenticated instances showing that the virus has retained its activity for more than one year.

The most remarkable case of the kind is related by Dr. Walton in the Richmond and Louisville Medical Journal in 1873, in which there is a report that a young lady had taken smallpox by putting on a dress that twenty years before had been worn by a lady during a spell of smallpox. The dress, in the meantime, had been thrown in a garret loose, where it had remained until the young lady put it on.

The spores of anthrax have been found by Prof. Koch to retain their activity and to exert their poisonous energy after they have been kept dry for a period of twelve years. Experiments made with the vitality of other disease germs show that many of them retain their activity for many months.

George H. F. Nuttall, M. D., of Johns Hopkins University, in a book entitled "Hygienic Measures in Relation to Infectious Diseases," states as follows:

"That the bacillus of consumption retains its virulence for five months in dried sputum; that the bacillus of typhoid fever withstands drying for three months, and also resists the action of carbolic acid; the bacillus of diphtheria, if kept in clothing in a damp, dark place, may retain its virulence from four to seven months. The germ which produces pneumonia resists drying and sometimes remains infectious for two or three months, and may be inhaled with dust, producing an attack of pneumonia. Of the bacillus of cholera, he says, "Freezing does not kill it, and in a low temperature with incomplete drying, or dampness, it may retain its activity for months."

The same author says that the bacillus which produces the rag sorters' disease may remain active for a long time, especially in the dust of apartments and haylofts, and that it is sometimes found in garden earth and in putrefying matter.

CHOLERA.

Concerning the transportation of cholera germs by means of rags and old clothing, there is abundant evidence to show that it is so conveyed, as the following instances demonstrate:

As long ago as 1848 Prof. Alonzo Clark, of New York City, cited two instances of cholera being brought to the United States, as follows:

"The ship *Swanton*, sailing from Havre October 31, 1848, bound for New Orleans, had German emigrants on board who came from cholera-infected regions; and on November 9 the ship *New York* sailed from the same port under the same conditions. Havre was free from cholera.

"On November 25 cholera broke out on the *New York* and on the 26th it appeared on the *Swanton*, the ships at that time being hundreds of miles apart on the ocean."

"The captain of the *New York* stated that a cold wind came up, causing the emigrants to unpack their clothing for warmer goods, the clothing having been packed originally at their homes, where cholera prevailed. The next day after unpacking the clothing cholera appeared on the ship."

"The ship *Swanton* had run into warm weather, and the captain of that ship reported that the emigrants on board unpacked their clothing which had been originally packed in their homes, where cholera prevailed, in order to get thinner clothing; and the next day cholera appeared on that ship."

Dr. S. Brush reports the following instance: "In the summer of 1849 a family residing in northern Indiana died of cholera. The clothing of the family was packed late in the spring of 1850 and sent to some relatives in Castalia, Ohio, who opened the box and used the clothing. The latter family was attacked with the disease, being the first in the town; and from them the cholera spread through that village and the surrounding country, being very fatal."

In House Ex. Doc. No. 95, Forty-third Congress, second session, which is a report of "The cholera epidemic of 1873 in the United States," prepared by Ely McClelland, M. D., assistant surgeon in the U. S. Army, the following cases are reported:

"In August, 1873, some Russian emigrants reached Yankton, Dak., having come direct from the Crimea, where cholera then existed. They sailed from Odessa.

There was no cholera on shipboard, none at Yankton, or any other place en route. They brought boxes of clothing, etc., with them. At Yankton they were temporarily lodged in vacant schoolhouses. Arriving there they unpacked their belongings, and immediately afterwards 2 children were taken ill and died of cholera; and the disease spread rapidly, 42 cases occurring among the emigrants, from whom it spread to the citizens."

He reports the facts of another case as follows:

"A family named Antonson came from Vuk, a place near Bergen, where they remained three weeks before being able to get a vessel on which to sail to New York. Cholera was prevalent in and about Bergen when the family went there. There was no cholera on the vessel upon which they came, nor was there cholera in New York when they landed, June 26, 1873. From New York they went to Willmar, Minn., passing no place where cholera existed. On July 2 the family opened their boxes containing bedding, clothing, etc., and on July 3 one of the party was taken sick with cholera; and the rest of the party, with one exception, were all taken ill with the same disease."

He also relates the following case:

"A family of Hollanders left Tubbergen May 31, 1873, arriving in Carthage, Ohio, where there was no cholera. On the 13th of July the boxes and bales of bedding, etc., arrived and were unpacked and hung up about the house. On July the 15th one of the children was stricken with cholera; and six of the residents of that house died of the disease. From this center cholera spread to other places in that city. Thorough investigation was made of this case, and it was found that the family went from Rotterdam to Liverpool, and sailed thence for New York. There was no cholera in Liverpool, but it did exist in Holland, as is shown by extracts from the Nederlandsch Tijdschrift Voor Geneeskunde Eerste Afdeeling, 1873, where it is recorded that more than forty places in Holland were infected by cholera. The family went straight through from Baltimore to Carthage, stopping only overnight in Cincinnati, reaching Carthage on the next day, the 10th. On the 13th their boxes and bedding came, and the contents were hung up to air and dry. On the 15th a child 3 years old was attacked within forty-eight hours after the boxes of goods from Holland were unpacked. Other members of the family died from the disease within a week.

"There have been comments upon this case, to the effect that it had not been shown that cholera existed in Holland, whence these people came. To determine this point I made search as to the existence of cholera in Holland at that time, and the results are given above. As a matter of fact, during that year the disease visited nearly all the principal cities and villages of Holland, the names being given in the number of the Journal above quoted."

Prof. Hirsch stated at the Berlin Sanitary Conference, held in July, 1884, that his investigations at Posen in 1873 showed that in several instances articles of clothing had been brought from cholera-infected localities to places remote which were free from the disease. The effects having been unused for some time, they were then unpacked, and the persons "who had directly to do with the infected clothes were the first to be attacked with the disease."

He cited the following:

Concerning the case quoted by Prof. Leyden, he said that in the town of Muhlhausen, in Thuringia, there were 9 cases of cholera, 4 proving fatal, in the cholera epidemic of 1873, all of which, with the exception of 1 case, belonged to one house. The house was inhabited by 6 families, numbering 23 persons. Three of the families, numbering 11, inhabited the basement floor. Behind the house was the drain of a closet, which was used only by the inhabitants of the basement, other water-closets existing for the inhabitants of the other stories. The first case of cholera occurred August 26. The patient was a woman who had come a few weeks before to Muhlhausen from St. Louis, in the United States of America, via

New York, Hamburg, and Bremen, but had only received the effects which she had brought with her from America about the beginning of August. Among these effects was some soiled linen, which she sent to be washed, and some confectionery, which she and her sister, in whose house she was living, partook of. A few days afterwards the newcomer was attacked with cholera; then her sister, her child, and her grandmother. And soon afterwards cases of cholera occurred amongst the other families. Out of the 11 persons inhabiting the basement only 2 escaped the disease, and 4 died.

When the effects left St. Louis cholera had been raging severely in the quarter of the town from which they came. There was no cholera in Muhlhausen until after the arrival and unpacking of the baggage brought by this family.

Dr. John H. Rauch, in an article published in volume 13 of the American Public Health Association for 1877, says, after referring to the three epidemics of cholera reported as occurring in 1873, at Carthage, Ohio, in Minnesota, and at Yankton, Dak., brought by infected clothing belonging to emigrants, as follows:

"These three instances, which have now become historic, might be supplemented by my own experience as sanitary superintendent of Chicago during the same year. The first cases in this city were in three different families which had received emigrants from Europe direct from the port of New York, in which city, it should be remembered, there was no cholera during the entire year. Members of these three families were attacked by the disease within a short time after the arrival of the emigrants, and after thorough investigation had been made the clue to the outbreak was discovered, namely, the infected goods of the emigrants, as in the similar outbreaks in Ohio, Minnesota, and Dakota."

In 1854 cholera broke out in the village of Ridgemont, Bedford County, England, and 11 cases occurred, all of which were fatal.

It was ascertained that the first case there was that of a man whose son had died of cholera in London a week or two before, and whose clothes were sent to Ridgemont. The man to whom they were sent unwrapped the bundle, was seized with the cholera and died; and this case was the nucleous of the epidemic. An instance of similar nature was reported from Lusthien near Munich, where the first case of cholera appeared in the house of a laborer, one of whose daughters was in service at Munich. The latter sent her parents some clothes which had belonged to a family, some members of which had just died of cholera; this clothing was at once appropriated and worn; three days afterward the father and mother were seized with cholera and died, and other members of the family took the disease.

Dr. Lebert reports the case of a man who was attacked with cholera, having worn the clothes of a person who had died of the disease two months previously. Dr. Brown, of New York, reports in the Sanitarian, July, 1885, the case of a woman 67 years old who died of cholera during an epidemic. Ten months after the subsidence of the epidemic in the country, the husband opened a trunk which contained wearing apparel of the dead woman and gave them to his niece, the man died of cholera the next day.

The report of Dr. Ruysch already referred to (Rags, a National and International Danger), states that a ragpicker from Amsterdam where cholera was raging in 1866, introduced the disease into the city of Tilbourg; that at Druten, a ragpicker was the first victim of cholera in that commune, and he states also, that at Heusde, Oudendosch, Hindeloopen, Nieuwsburg, Leeuwarden, and Bois le Duc, the cholera was propagated by old clothing. That at Mearssen the first one attacked with cholera was a ragpicker. Dr. Ruysch quotes from the Annales de l'Inspection Neerderlandais.

Dr. George M. Sternburg, now Surgeon-General U. S. Army, relates in the New York Medical Journal, August 29, 1885, an instance reported to him by Dr. Sonderegger, president of the Swiss Physicians' Commission, which was investigated by Prof. Biermer, of Breslau, and by Dr. Zehnder, vice-director of the board of health, that an outbreak of cholera occurred in the village of Kriegstetten about 100 kilometers from Zurich. At this village is a paper mill, and one of the rag sorters or rag cutters was taken ill with cholera and died, the next day 16 more workwomen, all rag tearers, were taken sick, and 11 died. Careful investigation showed that the rags came from Zurich, where cholera was epidemic. The rags were then disinfected by boiling, and there were no more cases of cholera.

Dr. Drasche, in commenting upon the foregoing case, said that while it was difficult to prove absolutely that cholera is transmitted by rags, yet the preponderence of evidence is to that effect, and that rags should be considered dangerous from cholera-infected regions.

E. Hoffman, a delegate from Austria to the International Conference in Rome, 1885, puts himself on record thus:

AUGUST 11, 1885.

VERY HONORED COLLEAGUE: In reply to your highly-prized letter, which I received yesterday, I reported as follows:

"I hold that rags which come from regions infected with cholera are exceedingly dangerous, not merely because they may be soiled with cholera dejections, but especially because they hold in the interior of the bales, the infectious material longer than might otherwise be possible, for the dejections, etc., dry out very slowly; and the warmth in the interior of the bale is favorable to the growth of microscopic organisms. On the whole there takes place in this respect, the very same process which is always to be observed in single rags, where the infectious material is kept moist a longer time in the folds, or in places where it is more closely laid together, and keeps the microscopic organisms contained therein much longer in a condition to multiply.

"In Austria whenever the cholera breaks out in another country the importation of rags is imperatively forbidden. Special regulations about the disinfection of rags do not exist, and only general directions for disinfection are enforced. I, myself, would employ only heat (steam) and complete aeration. It is of the highest importance in this matter to see to it that only thoroughly dried rags are packed in bales and brought into trade. With reference to the so-called rag sickness, which in my opinion, is a form of anthrax, and which affects especially the workers in paper factories who open bales of rags and perform the first work upon them, sorting and cutting the rags, I have required that the rags before being manufactured should be treated with superheated steam, then spread upon a grating and thoroughly dried."

In the British Medical Journal, August 23, 1873, there is an article on "The channels through which cholera is communicated," by John Murry, M. D., inspector-general of hospitals in India, in which he says as follows:

"In India in 1869, under the orders of the Government, I collected the opinions of the medical officers in that country on the chief points in the history of cholera. The result shows the views of 505 members of our profession who have all had experience of the disease. By 492 of these, the clothes and bedding were recommended to be burned, while only three opposed this view."

He cites many instances to show the communicability of cholera by clothing, etc., and among them this: "One of the most remarkable illustrations is related by Dr. Simpson, who states that a young lady in 1832 was attacked by cholera after wearing a cap which had been worn by her aunt who had died of cholera nearly a year before." The cap had been set aside in a drawer which was not opened until that day. Similar cases are mentioned as occurring in England and Germany, by Prof. Pettenkofer, of Munich, 1854, by Dr. Seibert, of Frankfort, in 1856, and by Dr. Fauvel, in France, in 1868.

Prof. Brouardel, of Paris, in Annales d'Hygiene Publique, 1885, has a very interesting article on the measures to preserve Europe from epidemic diseases, pest, yellow fever, cholera, etc., and refers to effects, linen, etc., as a means by which contagion is introduced into the country and of the great necessity of carefully guarding against the introduction of disease by this method. He says "The linen which has been polluted by the dejections of cholera patients is a powerful agent of propagation, sometimes direct, when by the contact of the hands one carries the germ to the food; when one breaths the effluvia; or indirect when the people drink the water below the washhouses;" and he cites several examples of the kind to sustain his opinion.

Dr. Edward O. Shakespeare, of Philadelphia, in his "Report of cholera in Europe and India," which is a monument of painstaking labor and research, says, page 81, in discussing the question of the transmission of cholera by linen and clothing contaminated by choleraic dejections: "In the accounts of choleraic epidemics that we have reviewed, it is stated time and again that such a person having in the course of the epidemic washed the linen of a cholera patient has been in turn attacked by cholera. But this fact is often subject to diverse interpretations, for one can always say that as in a choleraic focus there exists for each individual many ways of being attacked by cholera, it can never be affirmed exactly what has been the origin of the attack of cholera.

"The data which we are going to relate seem to us, on the contrary, to warrant but one conclusion. One factor alone is concerned: Linen soiled by choleraic dejections, its exclusive and consequently incontestible action.

"A naval surgeon dies at Toulon of the cholera. His linen is sent to La Vallette, where they refuse to wash it. It is then forwarded to La Farlede, where the cholera had not yet shown itself. The daughter of the washerwoman, who had assisted her mother, is attacked by cholera and dies.

"At Sollies-Pont the first case was that of a woman who washed the linen sent from Toulon by her son, who was sojourning in that city and had been attacked by choleraic symptoms; she was carried off in a few hours.

"At Nantes the first case had been that of a Mr. Conn, living in the quarter of the Gare. His linen was given to a washerwoman, the widow of D., who on the 18th of October washes this linen soiled by choleraic dejection. Attacked the 18th, she died the 22d.

"At Yport there arrived from Cette on the 28th of September, Ebaz, one of the sailors of a Newfoundland boat. The 29th he had his effects in two lots soaked in a tub. (He had had an attack of cholera at Cette, from which he had completely recovered). In this task he was assisted by his sister-in-law and his brother. The 4th of October his sister-in-law went to the fountain to wash these same effects; in returning she was attacked by all the symptoms of Asiatic cholera and died in a few hours. She had had the diarrhea since the evening before.

"All these facts appear to us conclusive that to handle and to wash linen soiled by cholera dejections is to expose oneself to the cholera; that soiled linen is an agent of transmission."

"In all the choleraic epidemics it has been remarked that the washerwomen particularly were attacked. The epidemic of 1884 was not an exception. At Yport Dr. Gibert notes that the laundry people have formed a considerable contingent of the cholera patients.

"On the 23d of July there arrived at Porta (Corsica), a country up to then entirely exempt, the Marseilles postman. He had just passed his quarantine of seven days at the lazaretto of Finowchiarola, where he had had vomiting and diarrhea, which were completely arrested by a strong dose of opium.

"At Porta he stops at the house of his mother-in-law. On the evening of his arrival she opens his trunks, takes out their contents and dusts everything, putting aside the dirty linen to wash it, which she does the following morning. In the evening of that day, about 10 o'clock, she is attacked with violent colic and dies twenty-six hours after the appearance of the first symptoms.

"On the 26th of July, at Milhas, far from every epidemic focus, and where up to then had not occurred a case of cholera, there arrived at Mrs. B.'s her husband and two daughters, fleeing from Marseilles back to their own country. One of the girls had at Marseilles nursed two women who died of cholera. She had been given several vestments which belonged to them. She had put these in a trunk that she brought back to Milhas. Mrs. B. and one of the daughters opened this trunk and took out the clothing, handling and washing it. On the 20th both die from a frightful attack of cholera."

In another case he cites an instance where "Mrs. R. simply opened a trunk containing soiled clothing; she handled it, but did not wash it, and succumbed from a frightful attack."

"On the 28th of July, at the hamlet of La Couche, far from the hotbeds of disease in the south and up to that time exempt, Mrs. R. dies in a few hours. The evening before the family had received a trunk from Toulon. This trunk had been sent by a relative who, having lost her daughter by cholera, had wished to save some clothing from being burned and had hastily sent it to La Couche in this trunk. The woman R. had opened it and handled the clothing.

"At Roquevaire, on the 23d of July, the woman Clotilde O. died. It was the first case at Roquevaire. They gave her bedding to a poor woman. The latter was attacked by cholera and died the 7th of August."

Prof. Koch, of Berlin, has uttered repeated warnings that all linen, etc., upon which there is dejecta, or vomit material, should be at once destroyed, and formulated his opinion before the Berlin Cholera Congress, as follows:

"First. Measures should be adopted by which the infectious matter be directly destroyed; also disinfection of the dejecta and the destruction or thorough disinfection of the linen; that the public should be instructed and warned of the dangers of using infected food, *e. g.*, uncooked food, unboiled water, and especially of the dangers arising from the use of infected linen."

If the disease may be carried from place to place in clothing it does not require a stretch of imagination to assume that if those same garments had been torn apart and thus become "rags" that the disease might still have been carried. The process of tearing does not destroy the germs.

In the pamphlet prepared by the Lewy Bros., of Berlin (January, 1893), previously quoted, many of the proprietors of rag establishments did not respond to the questions sent them and furnished no information. Of those who made reply thirteen report cholera among their employés, either among sorters or nonsorters of rags.

Finally the report of an outbreak of cholera during the month of September, 1893, at Papiermühle, a small isolated community in the consular district of Barmen, Germany, inhabited by the owners and operators of a large paper mill at that place, establishes the fact of the communicability of cholera by the medium of rags.

The first case of cholera in that part of the country developed and proved rapidly fatal in a sorter of rags employed at that mill. The man enjoyed good health until the night of September 2, 1893, when he became ill, and died at 10 the next morning. The sudden and suspicious death of the man alarmed the inhabitants, and they applied to Prof. Dr. Doenitz, of the University of Bonn, to make a microscopical examination of the excrement of the man. He did so, and pronounced the fatal disease to be Asiatic cholera.

The next day after the first man died another man was taken ill and died; and the disease spread rapidly through the town and neighboring suburb, where some of the operatives lived. The Government at once detailed Dr. Unshelm, a sanitary commissioner at Hamburg during the epidemic there, and Dr. Frosch, assistant to Prof. Koch, to take charge of all sanitary measures at the place, and if possible prevent the further spread of the epidemic. Investigation was made by the sanitary authorities, who reported that the Asiatic cholera was brought there in "a shipment of old rags, ropes, etc., received from Antwerp (where cholera had prevailed), and it is the belief of the eminent professors, physicians, and bacteriological experts that the Asiatic cholera was brought to this place in the rags, ropes, etc., above mentioned."

The first case of cholera appeared in a rag-sorter engaged in cutting up these rags and ropes, and the second case developed in a man who received the rags from this sorter and macerated them; the next case was a woman who assisted the sorter; and all the cases of cholera were among those persons who sorted, cut, or handled those rags, and at the date of the report 14 cases had occurred there.

The sanitary authorities took possession of the place, and immediately disinfected the rags, old rope, etc., by superheated steam, and disinfected the mill and buildings with sulphur and chloride of lime. The strictest sanitary laws were observed throughout the community by all the inhabitants, and the epidemic was immediately checked. The report upon this epidemic contains these words: "The first victim was the workman whose duty it was to unroll the old rags, cordage, and other similar material and cut it up into suitable lengths for the subsequent processes of paper-making, and while working among this infected material he is supposed to have eaten his midday lunch without first washing his hands, and thus the infection was surely transmitted."

To suppress the disease the most determined effort was made and proved successful.

The household effects of the cholera victims were destroyed by fire and their houses thoroughly disinfected, wells were closed, the graves of the victims dug 2 feet deeper than usual and partially filled with quicklime; a cordon of police guarded all roads leading to Papiermühle; no communication with the place was permitted, except to admit necessary supplies, and this was under the supervision of a sanitary inspector. Artisans who had been employed at the mills were not permitted to go there, and no one was allowed to enter the mill who would not submit to strict quarantine for ten days after leaving the mill. All food or water used was first thoroughly boiled or cooked. By these methods the epidemic was at once suppressed. This epidemic establishes two important facts: First, the transmission of cholera by means of rags, and, second, the suppression of the disease by the prompt execution of well-known sanitary laws.

This was the second instance of the suppression of an epidemic of cholera which occurred in 1893, the first being at the lunatic asylum at Neitleben, near Halle, Germany, where the disease broke out in a violent epidemic form in January, 1893, while we were investigating the subject in Germany, the strict quarantine rules established preventing our going into the asylum.

The disease was introduced into the asylum by means of drinking water. Prof. Koch was directed to supervise the administration of the sanitary laws in the institution and vicinity and succeeded in immediately checking the disease and preventing its spread by ordering and maintaining strict quarantine, and thorough sanitation.

The relative infrequency of the introduction of cholera germs in rags may be due to the infrequency of epidemics of cholera as compared with smallpox, and that thorough drying apparently destroys the activity of the cholera germs. Our investigations, however, have shown that in some places where cholera existed, or had but recently disappeared, the rags are baled while damp and retain their dampness until unbaled at their destination. These facts are set forth in the foregoing report.

Dr. W. M. Smith, health officer of the port of New York, who has given much time and attention to this subject, says in his report upon the "Disinfection of rags" that "It will doubtless be admitted that cholera and other severe forms of contagious disease, such as smallpox, diphtheria, scarlatina, and typhus fever, can be communicated by cast-off or soiled clothing; but old rags, it is said, have no such history as carriers of contagion. It is urged that rags are gathered months before being shipped, and the contagion, if there was any, has lost its power. This is probably true of a great portion of the rags imported, but it is certainly true that there are in most, if not all, consignments rags that have been recently gathered, and it is also true that the contagion of some of these diseases may be preserved in clothing and old rags for weeks and months, and when exposed to the air in the presence of susceptible persons will communicate their deadly poison."

Sanitarians have for many years, and with perfect unanimity, urged the necessity of thorough disinfection of rags to prevent transmitting disease germs, and everywhere this demand has been stoutly resisted by those interested in the rag trade on the ground that disease is not carried by rags.

If we had no other authority, the pamphlet prepared by the Lewy Bros. gives a record of 34 outbreaks of contagious diseases caused or transmitted by rags, 13 of cholera, and 21 of smallpox and other contagious diseases.

Our investigations show 206 outbreaks of contagious diseases which were introduced by rags, including smallpox, cholera, typus fever, hadernkrankeit (rag-sorters' disease), influenza, scarlet fever, etc., while typhoid fever and pneumonia are believed by some to be among the diseases which are conveyed by rags. Many of the epidemics became widespread, involving great loss of life.

Of this number, at least 74 outbreaks of contagious diseases caused by rags occurred in the United States. This does not include diseases brought by means of soiled clothing, being limited exclusively to those which were traced to rags. The actual number is doubtless much larger, but we have mentioned only those about which there can be no doubt. Every one of these epidemics might have been prevented if the rags had been properly disinfected. These epidemics will continue to come from time to time until all rags are disinfected.

At a conference of the representatives of the State boards of health and of maritime sanitary officials, held at Washington, D. C., December 10, 1884, the Secretary of the Treasury requested and obtained an expression of views from members of the conference in respect to the admission of rags from foreign countries.

The letter is as follows:

WASHINGTON, D. C., *December 11, 1884.*

The Hon. HUGH MCCULLOCH,
Secretary of the Treasury:

SIR: The committee appointed by the conference of State boards of health to consider the subject of national action relating to health, which committee had the honor of an interview with you this day, hereby repectfully submit the views of the committee respecting the particular source of danger to health upon which you have expressed a wish to receive the opinion of the committee, namely, from imported rags.

Members of the committee believe that contagious diseases dangerous to the public health occur in the houses of the people in every country; that old rags are collected mainly from cast-off material from the homes of the people, and that old rags in whatever country collected are not free from danger, and that it would tend to prevent the introduction into this country of more than one contagious disease if all old rags so imported into the country should be disinfected before or upon entrance at the port of entry.

The committee are of the opinion that disinfection of old rags can be effected by boiling them thoroughly; by exposing them to superheated steam so as to insure a temperature equal to or exceeding 212°; by the use of sulphurous acid gas, the rags being fully exposed to the action of such gas in the ratio resulting from the burning of 2 pounds of sulphur to each 1,000 feet of air, or by the use of the latter agent in any other form or manner which shall secure the subjection of the old rags to that agent in an effectual manner.

The committee further expresses the opinion that the disinfection of rags should be effected in any country where a proper inspection of the process of disinfection can be secured and such disinfection certified to by a representative of the United States.

H. B. WALCOTT, *Chairman.*
S. S. HERRICK, *Secretary.*

In 1885 Dr. George M. Sternburg, then surgeon, and now Surgeon-General of the U. S. Army, made investigations relative to the disinfection of rags, and the destruction of the bacilli in rags and old clothing, embodying the results of his investigations, as follows:

BALTIMORE, MD., *March 20, 1885.*

The SURGEON-GENERAL OF THE U. S. ARMY,
Washington, D. C.:

GENERAL: In compliance with instructions contained in a communication dated March 19, 1885, and with the request contained in the inclosed communication from the honorable Secretary of the Treasury, I have the honor to submit the following opinion:

My studies relating to disease germs leave no doubt in my mind as to the possibility of the importation of the germs of cholera, malignant pustule, smallpox, and yellow fever in old rags, whether baled or otherwise.

The germs of malignant pustule (anthrax) may be preserved indefinitely without losing their virulence, and we have ample evidence that the germs of cholera or smallpox and yellow fever may be preserved in infected clothing or bedding for a considerable time; exactly how long has not been determined.

That such infected articles could be preserved in bales of rags can scarcely be questioned, and it seems apparent that they are likely to find their way into the rag pickers' collections during the epidemic prevalence of these diseases, especially in countries where there is no organized sanitary supervision.

Very respectfully, your obedient servant,

GEO. M. STERNBURG,
Major and Surgeon, U. S. Army.

In 1870 a decree was issued, on the advice of the committee "Consultatif d'Hygiène Publique de France," making obligatory the disinfection of rags, old clothes, etc., coming from Egypt and Algeria, and limiting their importations to the ports of Marseilles, Pauillac, St. Nazaire, and Cherbourg, where there was at that time means for disinfection (now in disuse).

England, as we have seen, provides that rags landed for importation to that country must be disinfected by steam heat immediately, or, in default, be burned by the custom-house authorities. This regulation is now in force. The health officer of the port of London, in his report to the local government board, points out the expediency, as well as the simpler and safer method of having all rags disinfected at all times before permitting them to enter the country instead "of having from time to time transient prohibitory regulations, which cause serious dislocation of trade and annoyance from their uncertainty; and that there should be a fixed and definite plan of dealing with such goods."

We heartily indorse this recommendation for the reason that our investigations have shown the absolute necessity for such a course, if we wish to avoid the danger of contagion from infected rags.

The International Sanitary Conference held in Dresden March, 1893, adopted rules for the "Prohibition of the importation of rags and cholera-infected clothing" from one country into another during periods of epidemics, and also emphasized the necessity that existed for one country to notify all the other countries when cholera occurred in either of them; also the extent of the disease, and what measures were in actual operation to prevent the distribution of the infection. The investigations made by us show that not one of the rules mentioned above has been carried out in the countries where the disease has appeared since that time.

In discussing the question of quarantine Dr. Edward O. Shakespeare, of Philadelphia, in his voluminous report on "Cholera in Europe and India," page 843, says: "Indeed, so far as cholera, smallpox, and scarlet fever are concerned, it is only cargoes of rags that may be looked upon with suspicion as possibly capable of transmitting the germs of disease from Europe to America."

Not only expert sanitarians believe in the necessity for the disinfection of rags, but representative men of commerce, at least in the United States, believe in such necessity. This is made evident by the following resolutions which were adopted by the Chamber of Commerce of the State of New York on the 3d day of June, 1886, in which they say:

"First. That invoices of rags accompanied by a certificate of the U. S. consul that they were gathered in a country which at that time was, and for six months immediately preceding had been, free from cholera or other contagious or infectious epidemic diseases should not be required to be disinfected either before shipment or on arrival. In the absence of such certificate rags coming from a port or country claiming to be free from such diseases should be disinfected on arrival.

"Second. That rags gathered in any port or country where such diseases then were or had been prevalent at any time within six months immediately preceding the shipment thereof, and whether such rags are exported direct or via any other port or country, and whether landed or stored therein or transshipped overside to another vessel for reexport, should be prohibited from being landed in the United States so long as any prohibitory order published by the Government or health officers remains in force, nor when the order is rescinded should such rags be landed until disinfected on arrival.

"Third. That quarantine regulations in relation to rags or other merchandise or the disinfection thereof should be uniform at all ports of entry in the United States, and should be under the sole control and management of the U. S. Government.

"DANIEL DRAKE SMITH and
"CONSTANT A. ANDREWS,
"*Of Special Committee.*

"NEW YORK, *June 1, 1886*."

The resolutions of the chamber of commerce assume that the U. S. consuls can ascertain that the rags were gathered in countries free from epidemic diseases. This is an impossibility; not even the rag exporters can tell, even if they felt disposed to do so, where the rags came from. There is no duty upon rags coming into the United States; therefore exporters who go to the U. S. consuls for invoices are not compelled to produce the original bills of purchase, which are required when dutiable goods are sent; consequently rags are shipped from one consular district to another, and even from one country to another, before being finally exported. Hence, when an epidemic disease occurs in one district or country, and a U. S. consul refuses to give an invoice to rag shippers because of the epidemic, the rags are sent to some other district or country where there is no epidemic, and exported from there, being branded as though they had been gathered in the non-infected country.

This we found to be the case in all the countries visited, most of the rags coming to the United States via England and sent as English rags.

If 206 outbreaks of smallpox and other contagious diseases which have been clearly traced directly to rags, and which are here reported, do not carry any weight, do not prove the danger that constantly lurks in rags, then nothing will ever prove it. The facts are that rags do convey disease germs, that they are a constant menace to the community where used; that proper disinfection will remove the danger and prevent them from scattering pestilence. The practical question is, How much longer, how many more epidemics does this country desire to entertain before it puts a stop to this danger ?

The investigations made by us show that at the majority of places visited where disinfection is attempted it was worthless or a sham. The following article, quoted from the New York Therapeutic Review for April, 1893, shows the worthlessness of present methods. In that journal Dr. Paul Gibier has an article in which he says that at the beginning of 1893 a distinguished physician in New York City handed him a package of rags, and on the envelope was the following: "Samples 'disinfected' old German rags, arrived and passed at the port of New York December 10." They came from Bremen, Germany. Dr. Gibier made a series of examinations and says that "microscopic examination showed blood corpuscles, white and red, and numerous bacteria." In order to ascertain whether they are virulent or not, he subjected them to the ordinary methods and found that there were 110 colonies of bacteria developed on the several plates. In speaking of them he says, "I shall not enter into the details of the different germs which were isolated, but will merely mention that I found 11 species developed in the gelatine; among them were the usual microbes of pus (Staphylococcus albus, etc.), and a Streptococcus resembling that of erysipelas and pathogenic for rabbits. The deduction from these investigations is that the rags examined, which, we should judge, came from a hospital or dispensary where they had been soiled with pathological products, had not been submitted to an effectual process of disinfection. . Certainly they were not submitted to a high temperature, as among the germs were some torulæ, which can not survive a temperature of 158° F. even for a few minutes."

Referring to the matter of disinfection by heat where the bale is unopened, the New York Medical Record of May 29, 1886, has the following:

"Disinfection in the bale as at present adopted is of no use. This has been illustrated in a very interesting and conclusive experiment tried in Boston. The importers caused to be introduced into the different portions of bales where they were originally packed for importation, self-registering thermometers. These bales were afterward subjected to the steam disinfection without being opened at the port of entry, which was Boston, and the results as shown on the thermometers were carefully noted giving a range from 212° F. in one instance down to 85° F., the average being 109° F. Such a temperature, if it accomplished anything, would be in favor of propagating the disease germs rather than of destroying them."

Almost every country recognizes the necessity for the disinfection of rags, and certain of them prescribe the method. By their acts they proclaim in the most emphatic manner their belief that contagion is conveyed in the rags, by stopping the importation of them during an epidemic. If it is important to stop them during the continuance of an epidemic, it is certainly more important to stop them for some months afterwards, when rags infected by contagion would be most likely to find their way into the bales. Experience demonstrates conclusively that the only safety against the introduction of contagion by rags is to disinfect them. Diseases occurring when there are no so-called epidemics, such as typhoid fever, pneumonia, smallpox, scarlet fever, etc., kill more people than epidemics. It is to prevent the introduction of these diseases as well as to suppress epidemics that sanitarians are united in the opinion that rags should always be disinfected.

The principal argument used against disinfection is its cost. This is such a trivial matter that it should not be considered for a moment. The additional expense, small as it is, becomes a charge upon the rags and is not a loss to the manufacturer, the consumer finally paying the cost. If disinfection is insisted upon and rags are not permitted to enter the United States without being properly disinfected at ports of entry or before they are used in the mills, so that all dealers must fare alike, the talk about the cost of the process will cease, but so long as one firm sends rags branded "disinfected" which in fact have never been disinfected, and another firm by reason of watchful oversight is compelled to disinfect, the latter has ground for complaint.

The talk so frequently indulged in by those in the rag trade about the "small margin of profit on rags" as an argument against disinfection is senseless. The business is enormous; the profits are by no means small. No better evidence of this fact is needed than the existence of the enormous establishments owned and operated by those engaged in the trade and the wealth which they accumulate. It was a common remark made to us by the rag exporters in Europe while we were there that "rags are gold now," and they manifested great uneasiness and anxiety as to the probable action of the United States in forbidding the importation of rags. With them it is not a question of the cost of disinfection. They are nearly everywhere prepared to do this if it is demanded, and are willing to go to the expense of erecting such disinfecting plants as the United States may require, provided this would not interfere with importation. The uncertainty which exists among exporters as to whether the disinfection of rags will be continued for any length of time, or discontinued in a few weeks or months when fear of the present epidemic of cholera shall subside, is a source of annoyance to them, for if it is to be discontinued they do not wish to go to the expense of putting up such buildings and apparatus as may be necessary to comply with United States law; but if thorough disinfection is to be regularly practiced and demanded at all times before rags are admitted, then there will be an end of complaints from rag importers.

So long as the process is conducted as it is at present it affords no protection whatever, and it would be better to discontinue it; for as now conducted it gives a sense of security which is false. Rags are branded "Disinfected" and so certified which have never been near a disinfecting room; and where the process is attempted we found but very few places, of all those examined, where it could be called thorough or where it was anything more than a sham, often deliberately and intentionally practiced, and done for the purpose of deception.

Exporters affect to believe that rags do not carry contagion; under these circumstances it is senseless to commit the process of disinfection to them. The way to insure proper disinfection is to make suitable provision for it on our own shores, under the immediate supervision of quarantine officers, as is now done with baggage and products from countries considered to be infected. When this is done there will be no more outcry against the disinfection of rags than there is now against the disinfection of baggage, etc., which everyone believes to be a wholesome quarantine regulation.

Experience demonstrates that the best known method to insure perfect disinfection is to spread the rags loosely upon racks and subject them to a temperature of 220° F. for thirty minutes. Wherever this is done the process should be under the immediate supervision of a United States officer having complete control of the work, and it would be best to have the process carried on at specified ports of entry in the United States, to be designated by the proper authorities, and no rags from abroad should be permitted to land at any port or place. All domestic rags (rags gathered in the United States) should be forwarded to the nearest disinfecting establishment for disinfection before going to their destination.

Dr. George Buchanan, physician to the local government board of England, in his report for 1883 and 1884, says: "Bales of rags can not usually be properly disinfected without exposure to heat in such a way that every article in the bale shall attain a temperature of 250° F. The arrangement which gives greatest penetration of heat is the use of high-pressure steam."

In the "Annales d'Hygiene Publique," vol. 2, 1879, is the following:

"For the disinfection of rags it is necessary, as much as possible, to consider the interests of public health as well as those of commerce, and we judge that the previous disinfection of rags by heat is the process to be generally adopted, but to add thereto disinfecting vapors in special cases. The action of heat is prompt, almost immediate, which constitutes an economy of time, and heat alters neither the merchandise or its color, which is very important for the rag trade. We can not too frequently urge the importance of establishing large apparatus for disinfection by heat in our lazarettos. This apparatus is indispensable in order to treat the rags coming from abroad, as well as to cleanse those which are received from the interior of the country."

The disinfection of rags is proper quarantine service, for by it the introduction of epidemic diseases is prevented. Most of the rags coming into the United States enter by way of the ports of Boston, New York, Philadelphia, and San Francisco. The necessary apparatus could be supplied to these, or other ports if needed, and the work done under the supervision of United States quarantine officials, the cost of disinfection being charged to the importer. If, however, the present method prescribed by regulations made in conformity with recent quarantine laws (the sulphur process) is to be used, our investigation shows conclusively that in order to be made effective it must be thoroughly carried out, and the following plan is submitted:

Chambers for disinfecting rags and all other articles of commerce requiring disinfection must be practically air-tight, so that the sulphur fumes or steam can not escape; the chambers must be examined and approved by the medical or consular officer, or by an inspector to be appointed before disinfection begins.

If the disinfection is to be by the sulphur process, first ascertain the cubic contents of the chamber in square feet and enter the measurement in the inspector's book, together with the number of surface feet on the racks in the chamber. For disinfecting by sulphur fumes the articles must be exposed on racks so constructed that the lowest rack shall be at least 18 inches from the floor of the chamber, and the other racks above this must be not less than 2 feet apart. On these racks the articles shall be loosely distributed, so that the fumes may reach every part. Rags must not be laid upon the racks more than 6 inches in depth. After all openings in the chamber have been closed, weigh out and ignite the proper quantity of sulphur (3 pounds of roll sulphur for each 1,000 cubic feet of space in the chamber). Ignite the sulphur, close the entrance door, lock it, and place a seal furnished by the consular or other officer securely over the keyhole. The inspector must retain the key to the chamber in his possession. He shall note the hour of closing the disinfecting chamber in an inspection book to be kept for that purpose.

Six hours after the chamber has been closed it shall be the duty of the inspector to examine the seal, open the door of the disinfecting chamber himself, noting the hour of opening in the inspection book. The inspector shall sign his full name after the hour of closing the chamber, also after the hour of opening; and under no circumstances shall he delegate this duty to any person without the written authority of the consul or other officer, and such written authority shall set forth fully the reason why and the person who may be delegated to perform this duty, and such written authority shall be kept on file in the office of the consul.

If the inspector finds that the seal which he had placed over the keyhole of the entrance door has been broken or so detached that the door could have been unlocked, he shall weigh and ignite the same quantity of sulphur as originally used, reclose the door and reseal the keyhole, noting the fact in his inspector's book; and he shall keep the chamber unopened for six hours longer. The seals shall be issued by the consular or medical officer to the inspector by number from time to time, and each seal canceled shall be prima facie evidence that the disinfecting chamber has been used to disinfect the maximum quantity of rags or other goods which its ascertained capacity permits. And the number of bales disinfected must tally with the number of seals canceled, except when a seal has been tampered with or destroyed and another has been used to reclose the disinfecting chamber; which fact must be noted in the inspection book.

At the expiration of the six hours of fumigation the inspector shall himself open the door and personally superintend the removal of the disinfected rags from the chamber into a packing or baling room, and the packing or baling room must be clear of all rags, bagging, jute, or any other such material before the rags from the disinfecting chamber are placed therein. It shall be the duty of the inspector to remain in the packing or baling room until all the rags which have been fumigated shall have been packed or baled ready for shipment. After the bales have been prepared for shipment it shall be the duty of the inspector before he leaves the baling room to affix upon each and every bale a certificate to be furnished by his superior officer, in form as follows:

CONSULATE OF THE UNITED STATES OF AMERICA,

———, ———.

The contents of this bale (or package), with its covering, numbered ———, has been disinfected under my personal supervision, in accordance with quarantine regulations, method No. —.

———, ———,

Sanitary Inspector.

Label No. ——.

A leaden clamp tag may be affixed, as the consul or other United States official shall direct. If a blank form is used each and every such certificate must be filled out and signed by the inspector, and one certificate shall be securely fastened by the inspector upon each bale. He shall keep the running number of the bales disinfected in the inspection book, beginning with No. 1 each year, so that the book shall show each day the total number of bales certified by him.

If by any circumstance a certificate becomes worthless from injury or other cause said certificate must be returned to the consul or other officer and another will be issued in lieu thereof.

The certificates shall be issued to the inspector from day to day as required, and before new blank certificates are issued the inspector must show that all certificates previously issued to him have been affixed to bales or other packages which have been disinfected or returned to the consul or other officer. After the inspector has affixed his certificate to each bale or package he shall himself stencil upon the bale, in letters at least 1 inch in length, the word "Disinfected," and underneath his own name, thus:

DISINFECTED.
JOHN SMITH,
U. S. Inspector.

The stencil plate must be kept by the inspector, and when not in use by him it must be locked up and inaccessible to any other person. It shall be the duty of the inspector to examine the disinfecting chamber after the removal of the rags or other material, to see that the racks are in proper repair and in order to receive a new charge. If for any reason the racks or other parts of the chamber are not in a a condition to permit the rags to be properly disinfected he shall withhold his certificate of disinfection until the chamber is repaired.

It shall be the duty of the inspector once in twenty-four hours to fill out and make oath to a certificate in form as follows:

CERTIFICATE OF INSPECTION AND DISINFECTION.

I, ——— ———, United States sanitary inspector at ——— ———, do hereby certify that the ——— mentioned in invoice No. ——, hereto annexed, to wit, ——— bales, marked ———, and bearing upon each bale inspector's certificate, have been disinfected by exposure, under my seal, to sulphurous acid gas for a period of not less than six hours, in accordance with process third, prescribed in the United States quarantine laws and regulations approved April 15, 1893.

Attest:

——— ———,
Sanitary Inspector.

——— ———, 189–.

CONSULATE OF THE UNITED STATES OF AMERICA.

I, ——— ———, consul of the United States, do hereby certify that the above is the true and genuine signature of ——— ———, and that he was, on the date of signing the foregoing certificate, authorized to superintend the disinfection of ——— intended for shipment to the United States of America from the port of ———.

Dated ——— ———, this ——— day of ———, 189–.

In testimony whereof, I have hereunto set my hand and affixed the seal of the consulate, at ———, this day and year next above written.

——— ———,
Consul of the United States.

Said certificate or certificates shall be attached by the consul or consular agent to each invoice covering the number of bales described in the certificates, and said certificates shall go with the invoice to the port of destination; and no invoice of rags or other commodities which the quarantine regulations require to be disinfected shall be authenticated unless accompanied by the inspector's certificate.

The disinfection of all other articles of commerce required by the regulations, whether by the sulphur process or any other method, shall be done under the immediate personal supervision of the inspector, and the method used shall be guarded by the inspector in accordance with the foregoing requirements; the inspector's certificates shall set forth in all cases the method employed by him, the number of bales, packages, or parcels disinfected, and they shall be certified to and stenciled in the manner herewith prescribed for rags.

When steam disinfecting apparatus is used, the bale must be opened, the rags spread loosely upon racks to the depth of six inches, and subjected to a temperature of 220° F. for thirty minutes, the time to be reckoned from the moment that the thermometer registers 220° F., and this temperature to be constantly maintained during the whole of the thirty minutes, and the disinfection must be performed in the presence of the inspector, and the same precautions used in certifying and stenciling each bale as when disinfected by the sulphur process. In each method employed the sacking or other covering of bale or parcel must be disinfected with the goods.

INVESTIGATIONS RELATING TO THE INVASIONS OF CHOLERA.

It is difficult to obtain accurate statistics in countries where there are no statistical bureaus, no regular quarantine service, and no officials charged with keeping statistical records, so that exactness as to detail can not be secured; but sufficient is known to show conclusively that every epidemic of cholera which has entered Europe for the past sixty years has followed very closely one of two routes. To make the matter clear, the route by which the epidemic of 1892 entered Europe will be given.

The disease is always present in India, which country is called the birthplace of cholera, and where at times it becomes malignant and assumes an epidemic character. It thrives best where there are crowds of humanity and dirt, and finds its most genial soil where these two mingle.

The accompanying map has been prepared to show the routes by which cholera was carried from India westward. The red lines indicate the course of the epidemic of 1892 from its starting point in Hurdwar to Cabul. Herat, and Meshed, at which place the stream divided, one going via Kaaka on the Transcaspian railroad to Baku through Russia; the other kept the caravan route to Teheran, Resht, Tabreez, and Tiflis, again branching at Resht to Bagdad and going via Bassorah across the Arabian desert to Medina and Mecca.

Another route was via Kabul to Balkh, Bokhara, Khiva, and Orenberg, thence eastward to Omsk and Tomsk.

Some of the pilgrims from Bombay sailed up the Persian Gulf to Tao, thence by Bassorah across the desert to Medina and Mecca, but the larger number went via Camaran.

The quarantine station of El Tor is near the entrance of the Gulf of Suez, and Camaran is on an island at the southern extremity of the Red Sea. Other stations are located at Tao, the head of the Persian Gulf, Sinope, and Cavak, on the Black Sea, and Beirut, Smyrna, and Tripoli, on the Mediterranean.

The red dots in Europe indicate localities where cholera appeared in 1892; but the route by which it reached them is unknown.

The Afghans as a people are interested in commerce, and lead a migratory life for the purpose of carrying on their business, traveling from place to place in caravans, often numbering several thousand camels.

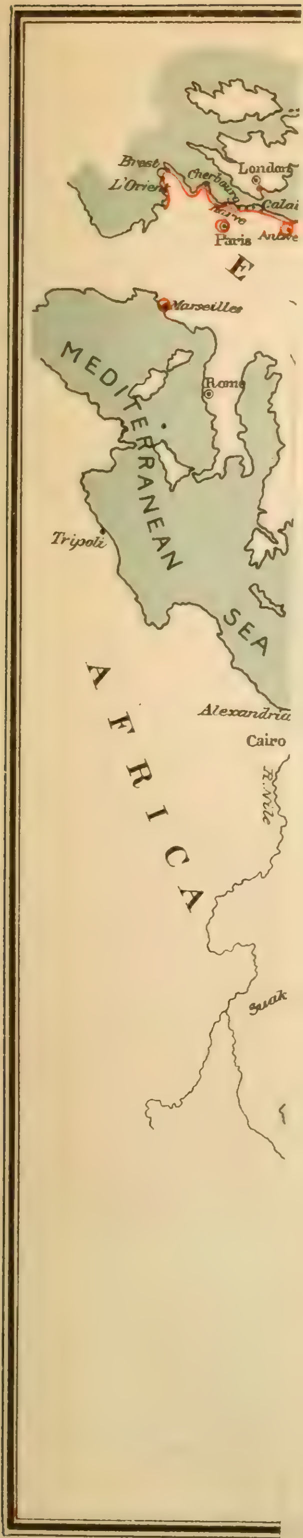
Sir Alexander Burns states that on one occasion he saw three great divisions with 24,000, 19,000, and 7,000 camels in each.

The Afghans move in such columns from their own country southeasterly into India, so governing their movements as to arrive at Hurdwar during the great Indian fair, held at that town annually, to which place the thrifty Hindoo comes, combining his religion with his desire to trade, for it is to Hurdwar that traders go from all parts of India to meet a like stream from Persia and Afghanistan, where they exchange the products of the two countries and indulge in their devotions.

The numbers coming annually to Hurdwar vary from 1,000 to 200,000, and once in twelve years it is estimated that the number of pilgrims traveling to Hurdwar numbers more than 1,000,000 souls, and they remain there from six weeks to two months.

Hurdwar is a small town on the river Ganges, just where that stream emerges through the Himalaya Mountains. The religion of the Hindoo makes it obligatory upon him to bathe in this stream at that point. It not infrequently happens in times of drouth that the stream at this place becomes nothing more than a series of pools, in which, however, everyone must bathe. Hindoos supposed to be dying, no matter of what disease, are put into the "sacred" water, and hundreds of sick are taken there for this special purpose. It is no infrequent occurrence that Hindoos in the last stages of cholera are immersed in the pool at Hurdwar in which there are hundreds of other people of the same belief bathing and swallowing the water of the "sacred stream." It thus becomes a focal point from which disease radiates.

It is from Hurdwar that epidemics of cholera proceed almost without exception. It is not clear where the disease comes from to Hurdwar, for in 1891 and 1892 it was known to exist in adjoining countries prior to the time that it made its appearance in that town, but on the 22d of March, 1892, there were several deaths from cholera in Hurdwar, and the authorities desiring to escape the fatality which usually attends an outbreak there closed the fair on the 25th of that month. Then the return movement of pilgrims began, the Afghans and Persians going to their


Brest
L'Orient
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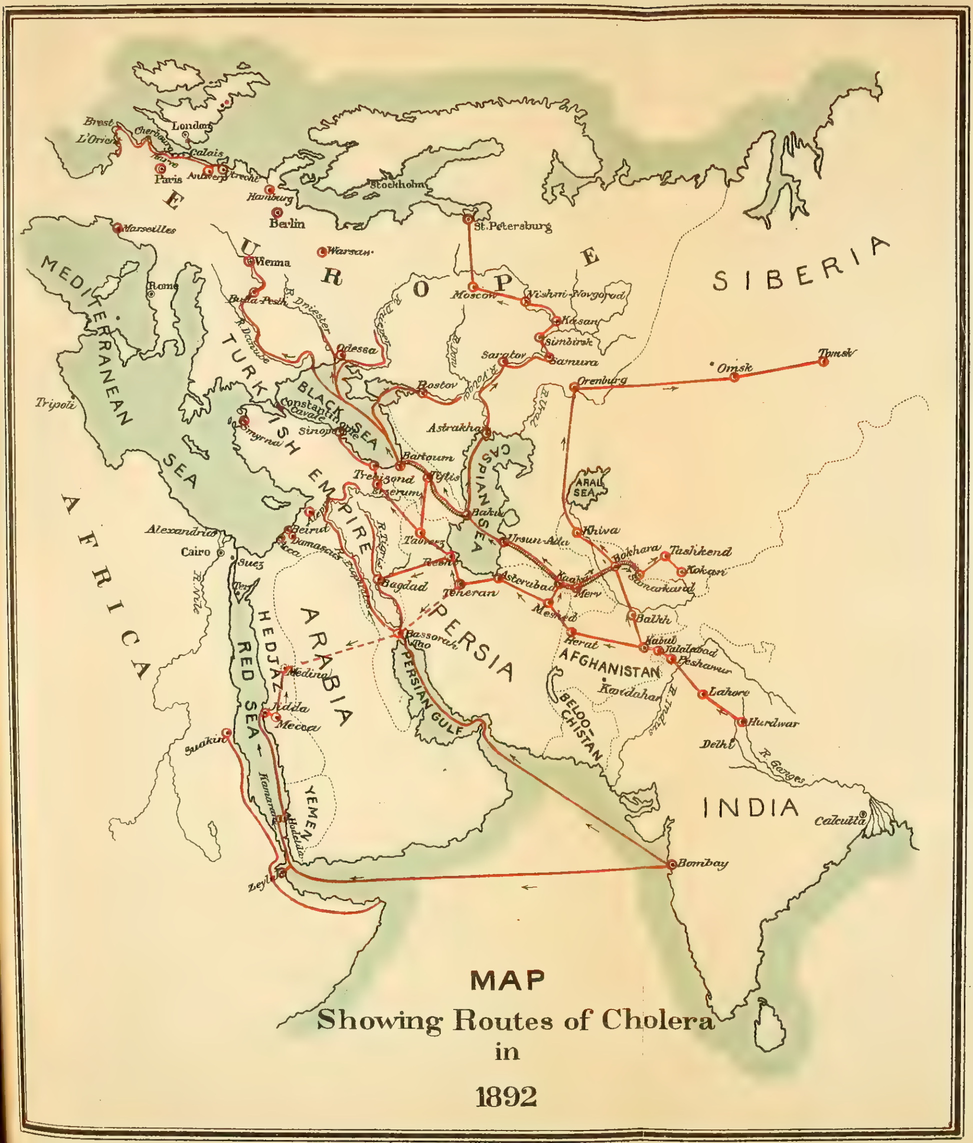

MAP
Showing Routes of Cholera
in
1892

THE NORRIS PETERS CO. PHOTO-LITHO. WASHINGTON, D. C.

own countries, reached Cabul, the capital of Afghanistan early in April, and between April 19 and 29, 1892, upward of 6,000 deaths from cholera occurred in that city.

From Cabul the nomadiac Afghan, with his wares from Hurdwar, continued his route toward Herat, a place 360 miles west from Cabul, and where the disease-laden caravan arrived in May. The city of Herat is also a great market to which traders from India, China, Persia, and other places resort, and where trade has been carried on for many years, and caravans are fitted out there, carrying goods to other countries. In the city of Herat 2,000 deaths from cholera occurred within a short time after the arrival of the caravan.

Still west of Herat lies Meshed, one of the largest cities in northern Persia, also a trading place for goods from Hurdwar and the East. It has about 55,000 inhabitants, and is one of the "holy cities" of Persia, containing the tomb of Imam Riza, a holy teacher. During a portion of every year pilgrims go to Meshed from India, Afghanistan, and the neighboring countries, and it is estimated that more than 60,000 visit the tomb annually. It is not known definitely how many persons died here of cholera during the last epidemic, but at one time the number of deaths exceeded 200 daily, the first case appearing there in May.

From Meshed the disease was carried to Kaaka, a railway station on the Transcaspian Railroad within the Russian Dominions, and about 87 miles from Meshed, where between May 31 and June 22 45 cases of cholera and 41 deaths occurred. Once on the line of railroad, the progress of the disease westward was more rapid. On the 6th of June it appeared at Uzun-Ada, the terminus of the Transcaspian Railroad on the eastern shore of the Caspian Sea and 370 miles from Kaaka. From this point all traffic from the East for Russia crosses the Caspian to the city of Baku, in Russia, and the disease shortly thereafter broke out in the latter place in a violently epidemic form.

The city of Baku is a great petroleum center, the oil being sent in all directions throughout Russia and exported to Germany and Austria. It is reported that the city has a population of about 108,000, having grown very rapidly for the last few years because of the increase of commerce. The population is made up largely of Russians, Tartars, and Persians, the Asiatic contingent living in indescribable Oriental filth, without even a rudimentary idea of hygiene or sanitation. When cholera appeared in the city there were no quarantine rules and the sanitary arrangements were of the most primitive character—in short, were worthless. As soon as they could do so, it is estimated that 75,000 people fled from the city, scattering in every direction, hoping to escape the scourge, but carrying it with them. Some of the fugitives went by steamship up the Caspian Sea to the city of Astrakhan, which is situated in the delta of the Volga River, where the disease arrived about the 25th of June. The city of Astrakhan is low, some parts of it being walled to prevent the sea from entering. Its principal industry is the preparationof fish for market, and it is never cleanly or in good sanitary condition. Like many other places in Russia, there were no systematic sanitary arrangements employed to check the epidemic, and, as a consequence, when it made its appearance, many of the inhabitants were panic stricken.

The Russian Government sent physicians and assistants to attend the sick, and to do what they could to prevent the spread of the malady, but the ignorant people resisted their efforts, and many of the physicians were roughly handled, and it was with great difficulty that the mob was suppressed, the inhabitants insisting that the doctors gave them medicine only to kill them. The method of burial did not conform to the requirements of their ordinary religious practices, and they stoutly resisted every effort for the early burial of the dead, or the use of anything about the body, such as disinfectants, etc., which were intended to prevent the contagion from spreading. In an attempt made by the governor of Astrakhan to institute proper sanitary methods, the violence of the mob was such that the governor's house was attacked, the windows smashed in, and many lawless acts committed, and the greatest resistance was offered to the removal of sick persons to the hospital; and it finally became necessary to send troops to quell the disturbances created by a simple effort to carry out the most ordinary sanitary precautions. It should be said that the resistance to these measures came largely from the Mohammedan population. The attempted enforcement of sanitary regulations occasioned riots in several other places. At Tashkent the governor's house was mobbed and two physicians sent by the Russian Government were hanged and others subjected to torture; Russian officials were killed, the hospitals pulled down or burned, and it was not until troops reached the scene and had killed more than one hundred of the mob that the disturbance was quieted.

In many places all aid was refused which had been offered by the Government; even the disinfectants sent to them they would not allow to be used, because they "interfered with the will of God." They declined to boil water or do any of those things which are known as prophylactics, because this was to interfere with the plans and methods of the Almighty, and anything which they believed might do this was resisted even to death. Under such circumstances nothing could be done but to let the people follow their own fatalistic ideas, and in consequence the cholera spread rapidly in every direction. From Astrakhan the cholera traveled up the Volga River, the great artery of Russian commerce and travel, 1,200 miles in twelve days, appearing at Saratov, Samara, Simbirsk, and Kazan (in which provinces the famine made such terrible ravages the preceding year), to Nijni-Novgorod, Moscow, and St. Petersburg.

At Nijni-Novgorod an annual fair is held, to which people come from all parts of the Empire, often bringing their families with them. The number of visitors frequently exceeds 200,000 people, who camp about the city, which has a normal population of about 75,000. The visitors make no sanitary arrangements and resent any interference on the part of the officials for such arrangements; consequently there is a total disregard for all such measures. Never clean at its best, the influx of traders with their animals adds to the existing filth and makes this place a focus from which disease spreads in all directions.

It was on July 19 (July 7 old style) that cholera made its appearance at this place; but notwithstanding this fact, the fair was opened on July 27 and the disease was doubtless carried by rail to Moscow, which is but twelve hours ride by rail, and from which city many traders go with their goods to Nijni-Novgorod. From Nijni-Novgorod or Moscow it spread to St. Petersburg and other places in northern and western Russia. Let us now return to Baku, at which point the epidemic entered European Russia. From this city one of the principal lines of railroad extends through the region of the Caucasus. The city of Tiflis is the seat of government for the Caucasus, and some of the inhabitants from Baku fled to Tiflis, introducing the disease into this region, which has been a hotbed for its development in every one of the preceding epidemics.

Cholera is especially virulent in this province; the intense heat of the summer months and the unsanitary conditions contributing to its development. During the month of June there were officially reported 20,000 deaths in twenty-three days, in a normal population of from three to four millions: but as nearly all who could go away did so, it was estimated that the normal population was decreased at least one-third if not one-half; and it is known that very many deaths were not recorded, so that it has been estimated that in the province of the Caucasus there were about 30,000 deaths in thirty days in a population estimated at 2,500,000. The official figures of the number of deaths from cholera in the province of the Caucasus alone from June to October, 1892, are as follows: One hundred and thirty-eight thousand seven hundred and eighty-one cases, and 68,353 deaths. Figures taken from "The Cholera Epidemic of 1892 in the Russian Empire," by Frank Clemow, M. D., St. Petersburg, 1893.

The disease has been very active in the same region since then, and broke out with renewed energy during the present summer (1893).

The Transcaucasian Railroad, which carried cholera to the Caucasus, transported it also to Batoum, on the Black Sea, which is the principal shipping port for produce from the Caucasus, and from which point the disease found easy ingress to the rivers Don, Dnieper, Dniester, and the Danube, the waterways of southern and western Russia, all emptying into the Black Sea, and up which streams the epidemic quickly traveled.

In Russia exact statistics are as difficult to obtain as they are in more eastern countries. A conservative estimate, however, based upon the known mortality in those provinces of the Empire in Europe where cholera raged with greatest intensity, places the number of deaths up to the end of November, 1892, as upward of 300,000; and does not include the large numbers who died from this disease in the winter of 1892 and during 1893.

The consensus of opinion among sanitarians with whom we conversed concerning the spread of the cholera epidemic throughout Russia was to the effect that had proper sanitary precautions been taken at the principal seaports, and at those places where the malady made ingress over railroads and waterways, it could have been controlled. It is known that troops came direct from cholera-infected regions, marching away from them to escape its ravages, and went to uninfected localities, passing the semblance of quarantine stations by falsely representing that they came from regions where cholera did not exist, thus carrying it to new and uninfected places.

The total lack of information possessed by the common people of the country with regard to the cause of the disease, the filthy habits and unsanitary conditions which are observable among the people of the rural as well as some of the urban places in Russia, together with the various superstitions which to a great extent control the life and actions of the Moujic as well as the Mohammedan, accounts for the frightful ravages of cholera in that country.

Dr. Clemow in the work above quoted, in writing of the cholera among the Russian subjects, says that throughout the Caucasus there is no system of drainage, the "dead wall" being the method used to dispose of sewage. The "dead wall" is a hole in the ground about 57 feet deep, which is gradually filled up with human excrement. This system having been long continued has polluted the soil so much that the report of the medical department upon this subject states "that a foul odor is observable in the basements of many houses and in some ice cellars in towns where this system is in use." Thus wells and springs, the sole source of water supply, may be readily contaminated.

In the Caucasus many of the people live in houses which are partly underground, the roof being not more than 2 feet above the surface, light being admitted through holes in the roof, which are closed at night or whenever it may be necessary to keep in the warmth. In the center of this establishment is a large room in which the cattle are kept, who share the same roof with their masters for about six months in the year. In the living rooms there is sometimes a hearth, in which dry cow dung is used for fuel and for cooking the food. The establishment is rarely ventilated, the excreta from human beings and from cattle remaining in the inside of the house, and is very rarely removed. Dr. Upenski, a Russian, forced by a snowstorm to enter one of these houses, after remaining a few moments left the place, facing the storm as a lesser evil. The well which supplies the household with water is often under the same roof, and not infrequently near the "dead wall." It is, therefore, little wonder that cholera rages in the

Caucasus, especially when we take into consideration the religious prejudices of the Mohammedans and the fatalistic indeas of the Russians.

Dr. Clemow states, page 13, that many of the people "are like the Caucasian highlanders, who change their linen only once a year, on the feast of Bairam," and excrement of all kinds is piled up about their huts.

The doctor also states that at all times the majority of deaths in this part of the country (the Caucasus) is from gastro-intestinal catarrh, and adds "so long as the cause exists, and particularly so long as the water supply of the towns and villages remains what it is, and the local authorities continue indifferent as to its source and purity, the Russian people must form a happy hunting ground for the cholera bacillus, and in all probability all efforts to check its spread when once it has passed the frontier will be futile."

In all parts of the country it is usual for the poorer people to wash their filthy clothing in the streams, thus disseminating disease germs. This habit was continued during the period of the cholera, and more than one outbreak of the disease was traced to this source.

The staple of diet among the Russian peasants is rye bread, which is black and acid, causing diarrhea in those not accustomed to it, and a soup made of fermented cabbages; and dried fish, salted herring, raw cucumbers, and melons. They use very little meat.

The common drink of European Russia is called Kvass. In St. Petersburg the authorities directed the public analyst to examine this material in the summer of 1893, and he reported that every sample furnished for analysis was "unfit for human use." Kvass is made from the fermentation of black bread.

From Dr. Clemow's work we extract the following figures concerning former epidemics of cholera in Russia, which he states are only approximate:

Year.	Cases.	Deaths.
1831	466,457	197,069
1848	1,742,439	690,150
1853	249,788	100,083
1855	331,025	131,327
1871	322,711	124,831
1872	310,607	113,196
Total	3,423,027	1,356,656

The final total for the epidemic of 1892–93 has not been given, but Dr. Clemow states that to the 1st of December, 1892, the total number of deaths from cholera "officially reported" was 267,880. This, it will be seen, was the largest number of deaths occurring in any epidemic since 1848, and the percentage of deaths for 1892 "is the highest ever reached, being 45.8 per cent."

In some of the Siberian provinces the disease raged with great violence. In the province of Tobolsk the total number of cases reported was 26,301, and of these 12,729 proved fatal. In Tomsk there were 4,697 cases among exiled prisoners and 2,272 deaths.

No reliance can be placed upon what some of the Government officials called "quarantine measures" or "sanitary regulations;" in most places where they were attempted they were inefficient and proved to be no barrier to the onward movement of the epidemic.

The condition of filth remaining after the "sanitary regulations" had been put in force was such as to invite disease and become a focus for infection.

An instance illustrating the general disregard of proper sanitary conditions is related by U. S. Consul Thos. E. Heenan, of Odessa, who states that the governor-general of the province issued invitations to a dinner given in the city of Ashabad to celebrate the disappearance of the cholera from that place. Of the numerous guests that attended the dinner one half of the number were dead within twenty-four hours, and forty-eight hours thereafter 1,500 people had died of the disease disseminated from this place. Investigation showed that the cause of the outbreak was due to the contamination of a stream of water which supplied the town, near which some roving people had camped, some of whom had died of cholera; a heavy rain washed the dejecta into the stream, which carried the germs into every part of the city, causing terrible mortality. There are no well advised sanitary regulations carried out even in the principal cities in the Caucasus, and at Tiflis, the seat of government, the examinations made of people passing over the railroad and the effort at disinfection of their goods was worthless. People direct from cholera-infected regions went to and fro, baggage and all, without disinfection or detention.

It is difficult to trace the disease from Russia westward. The route by which it reached Hamburg is a mystery; whether it came overland to that city via Russia, or whether it came, as some believe, direct from India, on ships plying between Hamburg and that country, is not known. The doubtful policy of the officials in Germany and France, who attempted to keep the disease a secret, a policy which, so far as France, is concerned, continued through the summer of 1893, endangered the lives of thousands and deprived sanitary history of very important facts. Whatever the route may be by which it came, it was quite general throughout France, during the summer of 1892, being most severe in the provinces of L'Orient and Bouches du Rhone, one on the northern, the other on the southern coast of France.

Having shown the route over which cholera invaded Russia let us return to Meshed, at which point it will be remembered the disease branched off to Kaaka, on the Transcaspian Railroad. West of Meshed lies the city of Teheran, the capital of Persia, about 60 miles from the coast of the Caspian Sea. It is always an unhealthy city, which is deserted during the summer by all who are able to leave. Like most Eastern cities, it is exceedingly filthy, no sanitary precautions being taken. Near Teheran is a famous shrine, to which those who consider themselves much oppressed resort. During the period when the cholera was most active in the city the religious teachers directed a body of pilgrims numbering about 1,500 to go to the shrine. The throng started, spreading cholera along the route and losing by death the greater part of their own number. It is estimated that during the continuance of the scourge at Teheran upward of 10,000 people died. From Teheran the disease crossed the country in a northwesterly direction to Tabreez, which is a famous market place for goods from Persia, India, Turkey, and the Black Sea; thence it went to Erzerum, a place with narrow, filthy streets, infested with dogs, and always in an unsanitary condition. From Erzerum there is a large exportation of wools which come from the interior, sometimes leaving the country from the port of Batoum, or from Trebizond, the latter being one of the most important seaports of Turkey and the natural entrepôt for goods from Persia, Turkey, and the East. Cholera was taken to Trebizond by troops, who carried it through the sanitary cordon.

There is still another route to be described over which cholera has traveled in former epidemics. Starting from Hurdwar as usual, it crossed the country by caravan to Kabul, thence by a northwesterly route through Balkh, traveling along the valley of the Oxus River to Bokhara and Khiva, and across the Kirghiz steppes to Orenburg, in Russia, and to Omsk and Tomsk, in Siberia, this being the course that commerce from the East ordinarily took, prior to the building of the Transcaspian Railroad by the Russians. The construction of this railroad will undoubtedly play a most important part in conveying the infection of future epidemics to the Caspian Sea and beyond. In the epidemic of 1892 we know that the progress of the disease was accelerated by the circumstance of infection traveling from

Meshed to the railway station of Kaaka, on the railroad to Uzun Ada, thence across the Caspian to Baku.

Commerce is not slow in finding its way to rapid transit; sooner or later wares from the East will abandon the slow progress made by caravans and reach the Transcaspian Railway by shorter routes than via Meshed and Kaaka. The distance from Kabul to Merv is not much greater than from Kabul to Herat. Already a line of railroad has been projected from Merv to Kabul, which when completed will shorten the time that it now takes to go from Hurdwar to Baku by at least three months. The Transcaspian Railroad passes through Merv, at which place there is an important station. The first route referred to proceeds from Hurdwar to Kabul and Herat, thence via Meshed to Astrabad, Teheran, and Tabreez; thence turning northward to Tiflis, in the Caucasus, and still proceeding westward to Erzerum and Trebizond, on the Black Sea. Having always the same starting point in India, it proceeds in a northwesterly direction, following the lines of travel and commerce toward the Caspian and Black seas, or it takes still another, a southwesterly course, from Calcutta and Bombay across the Arabian Sea, through the straits of Bab-el-Mandeb into the Red Sea; thence by Suez to the Mediterranean. Since the opening of the Suez Canal commerce from the East seeks its outlet through this channel, and pilgrims from northern Africa and Turkey in Europe to Mecca and Medina also take this route. (See map.)

At the period of the pilgrimages to the so-called "holy cities" the disease is conveyed from India across the Arabian Sea to the province of Hedjaz, a country bordering upon the eastern coast of the Red Sea, and in which are situated the cities of Mecca and Medina, to which places all Mohammedans are expected to make at least one pilgrimage, and in June, 1892, cholera-infected pilgrims from India began to arrive in the "holy cities." Prior to this time, however, in the autumn of 1891, cholera had been epidemic in the southern part of Arabia, raging with great intensity in the province of Yemen, on the southern borders of the Hedjaz. It was introduced into this province by a party of slaves who were brought into the country from Africa, which is but a few miles distant from the province of Yemen. There was at the time a rebellion in the province and many troops had been sent to quell it. The troops contracted the disease from the slaves, and by them it was spread to all parts of the province. While there is no direct evidence of the fact, it seems to be quite clearly established that troops returning to the northern portion of the country carried the disease into Syria.

The Turkish Government made an effort to prevent its extension from the province of Yemen, but the people would have none of it, and the health officials were driven away. It was not until it exhausted itself that the disease finally disappeared. At the city of Hodeida, in this province, it is known that there were more than 3,000 deaths from cholera, but only 750 were officially reported.

In the autumn of 1891 the disease appeared in Damascus, Beirut, and other places in the northern part of Turkey in Asia, having been carried there by troops, and there is some warrant for believing that there were sporadic cases of cholera during the following winter months in the neighboring province of Aleppo. To protect the "holy cities" from the frightful epidemics of cholera which occur there during these pilgrimages, quarantine stations have been established on the island of Camaran in the Red Sea, about 60 miles from its southern entrance and near the eastern coast, and another at El Tor, near the northern extremity of the Red Sea at the entrance of the Gulf of Suez.

The island of Camaran is about 60 miles south of Mecca and close to the eastern shore of the Red Sea, but at least 20 miles from the western shore, or the coast of Africa. (*See* Map.)

The condition of this establishment is best described by the official documents obtained from the health officers at Constantinople already given. It is sufficient to say here that it is in the most unsatisfactory condition and does not answer the requirements for which it was established. The pilgrims have an intense dislike to quarantine, saying that it does no good; and as it has been hitherto conducted, they are right. The quarantine at Camaran did not prevent the disease from reaching Mecca and Medina, where the ravages have been severe. The mortality during the epidemic of 1891 among the pilgrims who went by sea has been ascertained with considerable accuracy, but these figures do not take into account the vast numbers who went there by land.

Of the number who went by sea 46,953 pilgrims disembarked at Djeddah (the seaport nearest Mecca) and but 25,253 returned; 21,700 are believed by the Turkish authorities to have died of cholera or other diseases at or near Mecca. Pilgrims returning from Mecca and Medina to the northern coast of Africa, Tripoli, Algiers, etc., are subjected to quarantine at the station of El Tor, near the entrance to the Gulf of Suez. A report made upon the condition of affairs at that station, where it is not uncommon for hundreds of people to undergo quarantine detention, shows that quarantine regulations are insufficient, and we were told by the health officers that efficient work is impeded there by the Arab physicians. The drinking water, a mixture of rain and brackish water, is entirely unfit for use. Of the eight wells "only two supply fairly good water, and not in sufficient quantity." It is carried in open vessels on camels to the several sections of the camp and is warm and foul smelling. They have at this station a steam disinfecting plant. The process as carried on by the officials lasts from five to eight minutes. The clothing, etc., is not and can not be efficiently disinfected in that short time. Dr. Kaufmann, who made an examination of that place, reported (in the Hygienische Rundschau, Berlin) that he "caused a thermometer to be put into the apparatus among some clothing at the commencement of the disinfecting process, and when the goods were taken out it showed an increase of only one-tenth of a degree. Wax, paraffin, and sealing wax were not melted, and bacilli put in for the purpose of ascertaining the effect upon them were not injured." Said he: "The apparatus is too small and the time too short to do the work required, and the disinfection of ships and tents is altogether defective. This method of disinfection, supposed by those who undergo the process to be effective, in reality tends to spread every form of disease which may be contagious or infectious. The only way by which the station can be made effective is to introduce a supply of water, new management for the disinfecting apparatus, and placing the establishment under the charge of European physicians who will enforce sanitary discipline," and prevent diseases from passing this important station and finding exit into the Mediterranean.

As to the sanitary conditions obtaining at the cities of Mecca and Medina, they may best be understood by a brief description of the places. Mecca is situated a few miles inland from Djeddah, its port on the Red Sea. The city is in a narrow, desolate valley, having a stationary population of between 30,000 and 40,000, who subsist entirely upon the visiting pilgrims. The streets are narrow and extremely filthy, as there are no regular sanitary precautions. The little that is done in this direction is carried out by the Turkish Government just as the pilgrims begin to arrive, and consists of an order to the local authorities to have the city cleaned. The order is not obeyed, because they say they have no money to do the work with.

In 1892, however, a small appropriation was made by the Turkish Government for this purpose. A little over $7,500 was given for cleaning both Mecca and Medina—not one-tenth of the sum required. (*See* Report Council of Ministers, dated March 25, 1892, *supra.*)

The city is poorly supplied with water and there are no sewers. Cess pits, which are used as water-closets and rarely emptied, exist at the larger houses, while in the poorer parts of the cities even these conveniences are dispensed with, the gutters being used in place of cess pits.

The city is the birthplace of Mohammed, and the seat of the Mohammedan religion. The "Great Mosque" incloses the caaba, or "sacred house," in one angle of which is exposed a small black stone, believed by Mohammedans to have been brought to earth by angels from Heaven. To kiss the black stone is the chief object of the pilgrimage. In a house near by the mosque is a famous well, said to be the one from which Hagar obtained water for Ishmael. They believe the water to be a sure remedy for all bodily ailments, and that it refreshes the soul. To kiss this stone and drink a little of the water from one to two hundred thousand pilgrims visit the place annually. The method of securing the water is one that needs a moment's attention. The pilgrim presents himself at the well curb nearly naked. The attending official takes a large dipper of water from the well, and raising it above the head of the pilgrim, empties it upon his upturned face.

Believing in the virtue of the water, they swallow as much of it as they can; the balance, passing over the surface of the body, returns to the well; the process being repeated until the last one has gone away. Dying pilgrims are conveyed to the well, supported by friends, that they may obtain a few drops of the water, cheerfully yielding up life at a spot so sacred; hence, cholera germs are continually carried into the well, which becomes a veritable fountain of death.

Two hundred and forty-eight miles north of Mecca is the city of Medina, a place of about 20,000 inhabitants. It is much more cleanly than Mecca. Situated on a hill, the opportunities for drainage are good, and it is supplied with an abundance of water brought to the city by means of a conduit, said to be 25 feet underground. This empties into a large basin from which the inhabitants draw the water. The tomb of Mohammed is in a small mosque; as the nobility alone are permitted to enter the precincts, and only upon payment of a large sum of money, not all the pilgrims go there; although it is estimated that from one-third to one-half the number who live to get away from Mecca make the pilgrimage to Medina. These two cities are the focal points toward which Mohammedan pilgrims direct their steps from all parts of the world. Those who come from countries infected by cholera, bringing the scourge with them, communicate it to those who come from parts of the world where it does not exist; and who returning to their homes carry it with them. The importance of keeping these cities free from the disease is apparent, and until this can be done the conditions will be as they have been heretofore, and infection and reinfection will be continued.

The value of quarantine methods on the island of Camaran, regarded by the Turkish Government as one of the most important if not the most important of their quarantine stations, may be best illustrated by reciting the facts concerning the introduction of cholera into Mecca and Medina in 1892. It has been stated that the quarantine station at Camaran was established for the express purpose of protecting the "holy cities" from the invasion of the disease; and it is the intention of the Turkish officials to require all vessels having on board persons ill with cholera to go to the island of Camaran, and there submit to the necessary quarantine before proceeding to the "holy cities." We were informed by one who knew the circumstances that a ship having on board several persons ill with cholera, instead of going to the station at Camaran, where it was known they would be detained until all symptoms of the disease disappeared, landed its passengers at the port of Hodeida, a few miles south of Camaran, and making a detour around the station they proceeded on their way, taking ship beyond the quarantine station and landing at Djeddah without having been quarantined, but taking with them the scourge.

Europe is not safe from the invasions of cholera, and will not be until the countries wherein there are the greatest fatalities become more completely civilized, or until the governments of the earth take the matter in hand and organize for self-protection.

Official bustle at irregular intervals and when the disease is upon them will not disturb the deeply rooted religious convictions of centuries; and the slipshod manner in which the quarantine stations are managed affords no protection. Hence, so long as the conditions remain as they are, Europe and America must submit to the great loss of life and the enormous expenditures of money now made to protect themselves.

Persia makes no effort of any kind to suppress the disease. On the contrary, much is done to spread it. In illustration of this point, it is only necessary to state that there is a religious belief among the Persians that entrance into the Kingdom of Heaven is much more certain if the bodies of the faithful dead are buried in the "sacred" soil of Kerbela, and Nejif in Mesopotamia. Bodies of those dead of cholera as well as from other diseases are carried in some instances hundreds of miles that they may be buried in this "sacred" soil. If the deceased was wealthy the body is carried on, no matter how many bearers may die on the way or what number of places become infected by the disease. It is to them "the will of God," and there the matter ends. It must be borne in mind that the dead are not carried by railroads, for there are none. They are carried by camels or on donkeys, and sometimes by men in a species of basket, and they often leave a trail of death along the entire distance over which they travel. As embalming is not practiced, the condition of affairs may be better imagined than described. Orders have been issued from time to time, especially during periods of epidemics, to prevent carrying the dead, but there is little or no attention paid to it; and as there are no telegraphs or newspapers it is doubtful whether the orders are known beyond the official circle that gives them origin. As belief in the burial of the dead at those places is a religious conviction, the only way to prevent its continuance would be by armed force.

The extent to which this practice is carried is given by Dr. Macnamara, who investigated the subject and who states that in one season there passed through the station of Khanekin, which is on the boundary between Persia and Turkey, 52,053 pilgrims, with 64,138 beasts of burden, 4,504 muleteers, and 2,837 loads of human corpses; allowing three dead bodies to a load, the usual number carried by a camel, this would give over 8,000 corpses to be buried at Kerbela and Nejif in one year. Arriving there, the bodies are buried in the sandy soil, the grave generally so shallow that the wind blows off the sand and leaves the body exposed, a prey to dogs, vultures, etc. There are no regulations carried into effect requiring proper sepulture of the dead. Speaking of this custom, one of the health officers told me that during the advance of the cholera epidemic of 1892, the Turkish officials issued an order prohibiting for the time carrying the dead brought in this manner into or through the Turkish dominions; but we were informed upon reliable authority, a quarantine officer, that "the order is not enforced, and the custom goes on as usual."

The educated physicians of Turkey have repeatedly called the attention of the Ottoman Government to the deplorable state of quarantine and sanitary affairs throughout the dominions, and they have said, over and over again, that where quarantine is supposed to exist it is of no practical value, and the official reports already quoted bear out the statements.

One of the most distinguished physicians in Constantinople said to us: "At many places in Turkey lazaretto (quarantine) means two or three tents without a physician, without water, and a few soldiers to tax the travelers." Turkish officials charged with carrying out quarantine regulations are unable to do what they know to be necessary, because their powers are limited and only advisory, and the Government has but little money to carry out its own regulations. We were told that the important quarantine station at Camaran is closed during a considerable part of each year, sanitary officers being sent there to put the place in order before the annual arrival of pilgrims. They are destitute of appliances to carry out ordinary quarantine regulations, while in emergencies they are practically powerless. The disease has been carried around the station on land, and vessels with cholera on board have sailed past the station direct to Djeddah unmolested, although a Turkish war vessel is anchored off the island.

The health officers in some of the provinces of Turkey are required to report to the central authorities at Constantinople only once in six months. An epidemic may therefore begin, run its course, and cease before the central authorities know of its existence. We were told that it sometimes happens that the first intelligence of the existence of plague, which occurs in the rice-growing provinces, is the appearance of the disease in Constantinople, brought there by pilgrims; and we learned that although Malta had quarantined against the plague for two months, its existence had not been "officially" declared in Constantinople at the date of our visit. Not only is this true with reference to diseases affecting human beings, but it is also true of the frightful epidemics of disease among cattle, which is said to resemble cholera, and which often destroys entire herds. It commences and ends before any orders are issued looking to its restriction.

The dead bodies of the animals are thrown into rivers which often furnish drinking water for the people lower down the streams.

Sometimes the hides taken from carcasses of these animals are sent into the market unmarked and without disinfection. A few years ago the Nile was choked at one place by the bodies of cattle dead of this disease, and it was necessary to use steam apparatus to get them out of the stream. An instance of the loose methods of conducting quarantine business was related to us. It appears that the number of vessels coming into Turkish ports without bills of health of any kind became so large that it was considered necessary to make some regulations with reference to it, and a commission was appointed to prepare the rules. After duly considering the subject they suggested that a fine should be imposed upon such captains as seemed to wantonly disregard the rules; then added: "But if the captain can show that he was obliged to start without a bill of health, or had lost it on the way, then he should not be fined, and the vessel could come into port as though provided with a bill of health." We were told that it frequently happened that three or four ships a month came to Turkish ports without bills of health and the authorities went through the form of fining them, but, said our informant, "our laws are poorly administered, for we have not the means to carry them into effective operation."

It was only at the time when cholera was making rapid advances toward the Turkish Empire from Persia that orders for establishing the quarantine station at Sinope were given. The project had been recommended by the superior council of health over and over again, but the recommendations had been disregarded. When the disease was close upon them the necessary orders were given and a hastily constructed quarantine station, in no sense competent to do effective work, was built.

Sinope is about midway between Batoum, the most easterly port on the Black Sea in Russia, and Constantinople, at the western end. (*See* Map.) It is in Turkey in Asia. Vessels from Trebizond and other ports along the southern coast of the Black Sea find refuge in the magnificent harbor here afforded. The quarantine station is near the extremity of the peninsula, which extends for some miles into the Black Sea, and is most admirably situated for such purposes. At present it lacks proper equipment. It was intended to relieve the quarantine station at Cavak, located at the entrance of the Bosphorus into the Black Sea, a few miles from the city of Constantinople, and directions were given that all vessels having cases of cholera on board should be sent to Sinope, instead of treating them at Cavak.

The quarantine station at Cavak is one of the most important in the Empire.

Vessels entering the Bosphorus from the Black Sea having on board cases of infectious disease and bound for the port of Constantinople only a few miles distant are quarantined there.

The documents already given show how frequently attention has been called by the health authorities to the imperfections of this place as a quarantine station.

The International Sanitary Commission early in 1892 suggested that floating hospitals or hulks of vessels should be anchored near the quarantine station where cholera cases could be taken for treatment; but the Ottoman Government disapproved the suggestions made by the commission and ordered small barracks to be put up near by, and to have the quarantine station made as perfect as sanitary science could suggest, but at the date of our visit in April, 1893, but little of the work had been done.

Quarantine regulations as now maintained by all civilized nations are disregarded in Mohammedan countries because they are not mentioned or recognized in the Koran, therefore progress in sanitation will be very slow while the Koran is the law. Argument will do no good. Precept and example are valueless. The civilized world must face the fact that while present methods prevail they must be content to suffer the awful consequences of the scourge, the losses by death, the enormous expenditure of money to protect themselves in order that the religious observances of the Mohammedans may go on uninterrupted.

The epidemic of 1851 killed no less than 53,293 men, women, and children in England alone, and since 1817 the destruction of life in Europe has not been less than 2,000,000 human beings before the epidemic of 1892.

The deaths from cholera in Russia during 1892 will exceed 300,000, and the end is not yet. These numbers are exclusive of the frightful mortality in the Mohammedan countries. It is believed that the loss of life in Persia in 1892 exceeds 250,000.

France estimated that the financial losses caused in that country by the epidemic of 1884 exceeded 400,000,000 francs. Hamburg estimates that the loss to that city during the epidemic of 1892 amounted to 15,000,000 marks a day, but no estimate has yet been made public of the enormous financial loss sustained by the German Empire during the last epidemic.

Cholera invaded the United States for the first time in 1832, and since then there have been six epidemics, in 1834, 1849, 1852, 1866, 1867, 1873, and a few cases in 1886. Nearly all of them were attended with great loss of life, to say nothing of commercial disturbances and financial losses. In 1892 it again came to our shores, and nothing but extraordinary precautions, involving the expenditure of immense sums of money prevented its entrance. Such was the general anxiety of the people that the sum made available by Congress to prevent the introduction of cholera and other epidemics into the United States for the year 1893 amounts to about $900,000.

But, it may be said, that such close quarantine would cause an interruption to commerce; this is to say, greed of wealth is willing to sacrifice thousands of lives and millions of treasure that a few dollars may be gained.

England is the one country that cries loudest against "severe quarantine restrictions." Let us see what the practice of that Government is when the facts are placed side by side with her theorists.

At the sanitary conference held in Paris early in 1892 England was foremost in making an outcry against "severe quarantine restrictions," demanding "diminished severity" toward those who might have "traveled on the same ship with one or more cholera patients, and urging that, if the nations would but follow the lead of England, "useless detentions might be avoided" and quarantine improved. This is England's theory. Now for the practice. At Malta, where there is danger of cholera coming to the island from several directions, the following quarantine regulations were put into operation July 21, 1892, more than a month after the Paris conference had adjourned, and they were still in force at the date of our visit to Malta in March, 1893.

Section 1 of the regulations is as follows:

"Vessels with pilgrims from the East or having had cases of cholera on board, as well as all vessels having or having had on board cases of diarrhea, which in the opinion of the quarantine medical officer may be presumed to indicate cholera, shall not be permitted to enter this harbor."

Section 11 reads as follows:

"Passengers arriving from Egypt, Syria, and ports in the Red Sea will not be permitted to land at Malta unless they produce evidence satisfactory to the port authority that they have not resided or been in Arabia for the twenty-one days previous to their departure."

On March 10, 1893, the following regulation was added and put in force, which prohibits the authorities from landing anyone who may have had diarrhea while on shipboard, even when coming from England, where there had been no cholera:

"Passengers arriving direct from England on vessels having a duly qualified medical officer on board are to be allowed to land without medical inspection, provided that the medical officer in charge on board shall declare on oath that during the voyage there has not been on board a case of dysentery, diarrhea, choleraic cholera, or any disease with symptoms resembling cholera, either among the passengers or among the crew," and "the declaration above referred to shall be countersigned by the master of the vessel."

These regulations show that when the authorities of the English Government are brought face to face with a real danger of infection their quarantine regulations are as severe, if not more so, than those of any other nation.

There might be some force in the idea that prohibitive quarantine would interrupt commerce if the necessities of life came from the quarantined countries; but this is not the fact. The principal exports from Persia and Afghanistan are wools, carpets, rugs, skins, a few hides, and some drugs and gums, and if the export of these goods was to be interdicted during the inception and continuance of the epidemic the countries producing them would find some way to correct the evils we complain of and commerce be resumed.

Persia and the Eastern countries will make no advances in sanitation or any effort to keep the disease within their own boundaries until influences are brought to bear which will appeal directly to the pockets of the people. They are sharp traders, quick to take advantage of any plan which will bring money to their coffers by increase of trade.

An international agreement which would totally prevent all intercourse, either commercial or by travel with the well-known centers of infection, until proper sanitary precautions are maintained to prevent the extension of the disease, would bring about a change of sentiment in the now indifferent countries, and would be an object lesson to them which they would not fail to learn quickly.

Religious observances must not be interfered with; but the observers of such religious practices as are liable to decimate adjoining countries must be made to understand that while their neighbors do not propose to interfere in any way with their rites, they must take care not to cause the death or endanger the lives of hundreds of thousands of their neighbors; but if they continue to do so, then they should be confined within the limits of their own territory while those rites are being performed.

There was a time when the followers of Mohammed believed it to be their religious duty to put to the sword those who did not choose to accept his religious tenets, and made incursions into neighboring countries where they slaughtered men, women, and children who did not promptly accept the teachings of the "Prophet."

Physical force from other nations put a stop to that form of "religious observance."

The loss of life and treasure is no less burdensome when caused by a bacillus than when caused by a sword; the one is as fatal as the other, yet for some unexplained reason the world regards death by a cholera bacillus with comparative complacency, while death by the sword is regarded with horror, rousing the civilized world to quick indignation and rebuke.

If those people who, in the name of religion, now scatter the seeds of death broadcast over the earth were to be inclosed within their own countries during the continuance of their deadly observances, by the united effort of civilized nations, it would not be long before the followers of Mohammed would unite with other nations in a supreme effort to strangle this Moloch in the place of its birth.

International action will stop invasion of cholera.

WALTER KEMPSTER, M. D.,
Special Commissioner.
FAIRFAX IRWIN, M. D.,
Surgeon, Marine-Hospital Service.

NOVEMBER 30, 1893.

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OF THE

SUPERVISING SURGEON-GENERAL

OF THE

MARINE-HOSPITAL SERVICE OF THE UNITED STATES

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FOR THE

FISCAL YEAR 1894.

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MARINE HOSPITAL SERVICE
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OPERATIONS

OF THE

UNITED STATES MARINE-HOSPITAL SERVICE.

1894.

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REPORT TO THE SECRETARY.

TREASURY DEPARTMENT,
OFFICE SUPERVISING SURGEON-GENERAL, M. H. S.,
November 30, 1894.

Hon. J G. CARLISLE,
Secretary of the Treasury.

SIR: I have the honor to submit herein the report of the Marine-Hospital Service of the United States for the fiscal year ended June 30, 1894, this being the ninety-sixth year of the Service and its twenty-third annual report.

The statistical portion of the report terminates with the fiscal year. Pertinent information concerning the transactions of the Service to present date is included.

MEDICAL CORPS OF THE MARINE-HOSPITAL SERVICE.

During the fiscal year but one board was convened for the examination of applicants for admission into the medical corps. The number of applications for permission to appear before this board was 40. Twenty-seven presented themselves, four of whom passed successful examinations.

APPOINTMENTS AND PROMOTIONS.

Three successful candidates were appointed to the grade of assistant surgeon, and two assistant surgeons were promoted, after examination, to the grade of passed assistant surgeon.

CASUALTIES.

No deaths not previously reported have occurred, but it has been necessary to place upon waiting orders two assistant surgeons and one passed assistant surgeon, all of whom have been incapacitated by reason of tuberculosis. It is certain that two of these officers contracted this disease in the performance of their duties. One of these officers was first given a limited leave of absence and afterwards placed upon waiting orders. After residence in a locality most favorable to his recovery, namely, Asheville, N. C., he reported himself as again fit for duty, and April 26, 1894, was ordered to San Diego, Cal., to assume charge of the Marine-Hospital Service at that port. By reason of the healthful influence of this location his permanent recovery is expected.

MEASURE FOR THE RELIEF OF THE LEGAL REPRESENTATIVES OF ASST. SURG. JOHN W. BRANHAM.

The facts concerning the death of Asst. Surg. John W. Branham from yellow fever, August 20, 1893, have been set forth in detail in the previous annual report. Dr. Branham left a wife and one child, with no provision for their support. A bill was introduced in Congress making provision for the legal representatives of this officer by the payment of a sum equivalent to his salary and allowances for two years, the reasons for passing this bill being considered equivalent to those which prompted the passage of the act of Congress of May 4, 1882, in behalf of the Life-Saving Service. The following is a copy of the bill introduced and the letter commenting thereon written at the request of the chairman of the Committee on Claims, House of Representatives, together with the report of said committee. It is hoped that Congress will take favorable action upon this bill.

COPY OF BILL INTRODUCED BY MR. RAYNER FOR THE RELIEF OF REPRESENTATIVES OF JOHN W. BRANHAM.

Whereas John W. Branham, lately an assistant surgeon in the United States Marine-Hospital Service, contracted yellow fever while performing his duty as assistant surgeon in an infected city, and having died of yellow fever at his post of duty on the twentieth day of August, eighteen hundred and ninety-three: Therefore,

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Treasury be, and he is hereby, authorized and directed to pay, out of any money not otherwise appropriated, to the legal representatives of John W. Branham, the sum of four thousand one hundred and sixty dollars, being the amount of his salary and allowances for two years.

LETTER TO THE CHAIRMAN OF THE COMMITTEE ON CLAIMS OF THE HOUSE OF REPRESENTATIVES.

TREASURY DEPARTMENT,
OFFICE OF THE SUPERVISING SURGEON-GENERAL, M. H. S.,
Washington, D. C., February 20, 1894.

Hon. BENJAMIN H. BUNN, M. C.,
Chairman Committee on Claims, House of Representatives.

SIR: I beg leave to invite your attention to the inclosed bill (H. R. No. 3317), introduced by Mr. Rayner, entitled "A bill for the relief of representatives of John W. Branham," who was at the time of his death an assistant surgeon of the Marine-Hospital Service.

Dr. Branham was on duty at the port of New York at the time it became necessary for this Service to assume control of the quarantine at Brunswick, Ga. The following is a copy of a telegram containing his first order for this particular service:

"WASHINGTON, D. C., *July 20, 1893.*

"Assistant Surgeon BRANHAM,
"*Marine Hospital, Stapleton, New York:*

"(Through medical officer in command.)

"Report at Bureau without delay, en route to Brunswick, Ga., to take charge of quarantine station.

"WYMAN, *Surgeon-General.*"

Subsequently the following order was issued:

"JULY 22, 1893.

"Asst. Surg. JOHN W. BRANHAM,
"*United States Marine-Hospital Service, Washington, D. C.*

"SIR: Having arrived in Washington in accordance with telegraphic instructions, you are ordered to proceed to Brunswick, Ga., by way of Norfolk, Va., awaiting telegraphic orders from the Bureau at Norfolk, giving the time when you shall proceed. While there you will consult with Surgeon Carter with regard to the necessary details to be observed in assuming charge of the quarantine at Brunswick, Ga. Your formal orders to assume this charge, it is presumed, will be sent you by telegram on the 24th.

"WALTER WYMAN,
"*Supervising Surgeon-General.*"

On July 25 the following telegram was sent:

"WASHINGTON, *July 25, 1893.*

"Asst. Surg. J. W. BRANHAM,
"*Marine-Hospital Office, Norfolk, Va.*

"Proceed immediately to Brunswick, Ga. Instructions will be sent you care collector at that place.

"WYMAN, *Surgeon-General.*"

Final instructions were sent to him as follows:

"WASHINGTON, D. C., *July 25, 1893.*

"Asst. Surg. JOHN W. BRANHAM,
"*(Care collector of customs) Brunswick, Ga.*

"SIR: Confirming telegram sent to you this date at Norfolk, directing you to proceed immediately to Brunswick, Ga., you are hereby informed that owing to the failure of the Brunswick health authorities to enforce the quarantine regulations promulgated by the Secretary of the Treasury, you have been detailed by the President of the United States, under section 3, national quarantine act, approved February 15, 1893, to execute the said regulations at said port.

"You are hereby directed to inspect all vessels from foreign ports prior to their entry at the port of Brunswick and all vessels having had sickness on board during the voyage, and furnish the captain with a certificate of inspection of the vessel as required under section 5 of the national quarantine act. You are informed that the collector of customs at the port of Brunswick will be directed by the Secretary of the Treasury to refuse entry to any vessel from any foreign port or to any vessel having had sickness on board during the voyage unless the master has been furnished with a certificate of pratique by yourself.

"Surg. H. R. Carter has been ordered to Brunswick as inspector, and you are directed to consult with him as to the proper measures to be adopted in carrying into effect the instructions contained in this letter. You will inform the health authorities at the port of Brunswick of your orders from this office, and report immediately the details of any action taken by yourself under these instructions, and make such recommendations as may be necessary to carry them into effect.

* * * * * * *

"WALTER WYMAN,
"*Supervising Surgeon-General Marine-Hospital Service.*"

In accordance with the above instructions Assistant Surgeon Branham assumed charge of the Brunswick quarantine July 28, 1893. I will say here that he was chosen for this particular duty by reason of the fact that he was a native of Georgia, and therefore less likely to encounter the local prejudice which might be excited by the Government's assuming charge of this quarantine. A more important reason, however, was the fact that he had had previous quarantine experience, was a man of very unusual mental endowment, and with a marked stability of character and sound judgment, which made him particularly fitted for the trying position in which he was to be placed.

Dr. Branham, as stated, assumed charge of the Brunswick quarantine on July 28, 1893; on August 10, 1893, his illness was reported to the Bureau, and on August 20, 1893, he died of yellow fever while attended by two regular officers of the Marine-Hospital Service. He leaves a wife and an infant child.

The relief requested by this bill finds a precedent in the act of Congress, May 4, 1882, which grants to the families of keepers and surfmen in the Life-Saving Service an amount equal to two years' pay of said keeper or surfman in the event of death in the line of duty.

I earnestly urge the passage of this bill, leaving it to others to give expression to the implied obligations upon the Government to relieve the wants of the wife and child of one who heroically faced a danger fully equal to that encountered by the soldier in time of war.

I beg leave in closing this letter to transmit herewith an extract from the annual report of this Service for the year 1892, giving some previously expressed views upon this matter.

I have the honor to remain, very respectfully, yours,

WALTER WYMAN,
Supervising Surgeon-General Marine-Hospital Service.

REPORT FROM THE COMMITTEE ON CLAIMS, SUBMITTED BY MR. BUNN, CHAIRMAN, UPON THE BILL FOR THE RELIEF OF THE LEGAL REPRESENTATIVES OF JOHN W. BRANHAM.

The Committee on Claims, to whom was referred the bill (H. R. 3317) for the relief of the legal representatives of John W. Branham, having carefully considered the same, report it back to the House with the recommendation that it do pass.

Your committee find the following to be the facts:

The late Dr. John W. Branham was an assistant surgeon in the United States Marine-Hospital Service, and was, on the 20th day of July, 1893, stationed at the marine hospital at Stapleton, N. Y.

The yellow fever had broken out at Brunswick, Ga., and the United States authorities had established quarantine regulations there.

On the 20th of July, 1893, the President of the United States, without any previous notice to Dr. Branham, under section 3, national quarantine act, approved February 15, 1893, detailed Dr. John W. Branham to proceed at once to Brunswick, Ga., and take charge of the port and execute the regulations promulgated by the Secretary of the Treasury under said act. He immediately proceeded to Brunswick, Ga., and on the 20th of August, 1893, died of yellow rever, contracted while in discharge of the duties assigned him.

Your committee, while opposed to a civil pension roll in almost any form, think that a mere statement of the facts is sufficient to convince every patriotic citizen that the Government owes no higher duty to any of its citizens than it does to Mrs. Branham, widow of John W. Branham, whom we find is now a resident of the city of Baltimore, with two infant children and penniless, and while we do not recommend that she be placed upon the pension roll, we see no reason why the act of Congress of May 4, 1882, which grants to the families of keepers and surfmen in the Life-Saving Service an amount equal to two years' pay of said keepers or surfmen in the event of death in the line of duty, should not be extended to his family, and this is what is proposed by the bill which we favorably recommend.

Your committee fearlessly blaze the way, as indicated in this report, because we think it an act of simple justice, and but poorly carrying out the implied obligation upon the Government to relieve the wants of the wife and children of one who heroically faced a danger fully equal to that encountered by the soldier in time of war.

OFFICERS DETAILED TO ATTEND MEDICAL AND PUBLIC HEALTH ASSOCIATIONS.

Surgs. H. W. Austin and H. R. Carter and P. A. Surg. G. T. Vaughan were detailed as delegates to the Pan-American Medical Congress convened in Washington September, 1893.

In response to an invitation from the Government of France, Surg. P. H. Bailhache was detailed by the President to serve, in conjunction with two other delegates, as representative of the United States at the Second International Sanitary Conference, held at Paris, February 7 to April 3, 1894. A summary of the proceedings of this conference appears in the latter portion of this report.

Surg. H. W. Austin was detailed to represent the Marine-Hospital Service at the Eleventh International Medical Congress, held at Rome, Italy, March 28 to April 6, 1894, and P. A. Surg. J. J. Kinyoun was detailed for the same duty at the Eighth International Congress of Hygiene and Demography at Budapest, September 7, 1894. The service was also represented in public health bodies as follows:

May 9 and 10, 1894, by Surg. J. B. Hamilton, at a conference in Chicago of the State boards of health of Illinois, Indiana, Ohio, Michigan, and Wisconsin, called on account of the alarming increase of smallpox in Chicago and the increasing danger of its spread to contiguous States; in the Congress of American Physicians and Surgeons, Washington, D. C., May 29 to June 1, 1894, by the Surgeon-General of the Marine-Hospital Service; at the meeting of the American Medical Association, San Francisco, June 5 to 8, by Surg. John Godfrey, and at the twenty-second annual meeting of the American Public Health Association at Montreal, Canada, September 25 to 28, 1894, by Surg. P. H. Bailhache and P. A. Surg. Charles E. Banks.

REPORT OF SURGEON AUSTIN, DETAILED TO ATTEND THE ELEVENTH INTERNATIONAL MEDICAL CONGRESS AT ROME.

WASHINGTON, D. C., *July 9, 1894*.

SIR: Having been delegated by the Secretary of the Treasury to represent the Treasury Department and the Marine-Hospital Service at the Eleventh International Medical Congress, and in compliance with your order, dated March 1, 1894, I left the city of Washington for Rome March 2. Remaining overnight in New York, I took the steamer *Fulda* the following morning, March 3, for Rome, via Gibraltar. Having been granted a week's leave of absence by the Bureau, I stopped over one steamer at Gibraltar, taking the next steamer direct to Naples, where I arrived on the 22d of March. From Naples I proceeded by train to Rome, arriving there on the 23d. I immediately presented my credentials to the secretary of the International Medical Congress, and was duly registered and accredited as the delegate representing the Treasury Department and the Marine-Hospital Service of the United States.

On Wednesday, March 28, the International Exhibition of Medicine and Hygiene was formally opened with an official reception in the Palace of Fine Arts. This exhibition was gotten up by the officers of the congress, under the general direction of Professor Pagliani, and consisted of exhibits from various countries—principally

Italy and Germany—of sanitary appliances, surgical instruments, therapeutic agents, etc. There was quite a large collection of steam disinfecting plants for use in municipal disinfection, most of which were portable. I did not observe any marked improvement in these appliances over those now in use in this country. I would state that the apparatus in use by the Government of the United States for the disinfection of infected articles of merchandise or clothing is superior to anything shown at this hygienic exhibit. There were various devices for hospital stretchers, one of which I believe it would be well for the Marine-Hospital Service to adopt. It is simple in construction, consisting of bamboo poles and sail-cloth so arranged that it can be closely folded for ambulance service. It is the lightest stretcher that I have yet seen.

The congress was inaugurated on the morning of the 29th of March in the presence of His Majesty the King of Italy, accompanied by the Queen and the principal ministers of state, and the ambassadors and ministers of other countries.

The welcome was given to the various delegates and members of the congress by the minister of state, Signor Crispi, who was followed by Professor Baccelli, minister of public instruction of Italy and president of the congress. Professor Baccelli delivered an address of welcome in Latin, and formally declared the congress opened in the name of the King. The inauguration ceremonies, which were conducted in the Constanza Theater, were quite impressive and full of interest to the vast audience of learned men from every nation who were gathered in this ancient capital of the world to exchange opinions upon the one subject of common interest to all and to become acquainted with those engaged in the same labors. Upon the stage were seated the delegates from the various Governments in the uniforms of the services which they represented, and many others of distinction both in and out of the profession. The King's guard, with arms present, kept the main aisle free for the entrance of their majesties the King and Queen and his ministers, whose presence was announced in the music provided for the occasion.

The general sessions of the congress were held at the Exposition Hall, called the El Dorado. The various sections held their meetings at the Polyclinico Umberto I, which is a magnificent new hospital, not yet finished, located just outside the walls of the city. This building, in which are located the offices of the president and secretary-general, was erected for the purpose of affording clinical instruction in all branches of medicine, and all the public clinics in Rome will be transferred to this building as soon as it is completed. It is the most complete and best appointed institution of the kind in the world, and is a credit to the medical profession of the city of Rome.

The following may be mentioned among the noteworthy addresses which were delivered before the general meetings of the congress:

"Morgagni and Anatomical Thought," by Prof. Rudolph Virchow, of Berlin. It was evident that Professor Virchow was regarded as one of the great teachers of the present age. He was greeted with continued applause, and his classical address was listened to with absorbing interest.

"The Position of the State in Respect of Modern Bacteriological Research," by V. Babes, M. D., professor of experimental pathology and bacteriology in the University of Bucharest. This was a very able paper on State medicine, commencing with a brief historical survey of the same in different countries. It described the Government sanitary institutions of Roumania and the work accomplished by the same. There are many suggestions in the article that may be useful to the Bureau.

"Organization of Science," by Prof. Michael Foster, of the University of Cambridge, was a plea for the better organization of scientific workers.

"Non Noceri" (hurt not), by Professor Jacobi, of New York. This paper was an argument on what not to do, or, better, perhaps, the injuries that are done by medical men. It was well received.

Before the section of hygiene a very interesting paper was read on the epidemic of cholera in Italy, by Professor Pagliani, president of the section. I was able to obtain a copy of the same for the Bureau.

The congress was larger than any that had preceded it and included many of the great medical lights from different parts of the world. The city was overflowing with "congressisti." The principal Governments were represented by specially appointed delegates, as were also the various universities, colleges, State societies, great hospitals, etc. There was a general feeling manifested among the English-speaking members that they were shown less consideration in the assignment of time for the reading of papers and in their discussion than was accorded to some other nationalities, and, I believe, with reason. The English language is not so generally understood by the Italians as the French, and there was undoubtedly a special effort made by the officers of the congress, officers of State, and Italians generally to possess and please the Germans and Austrians. However, the English and Americans had a small representation as compared with the French, Germans, and Austrians.

Personally I was shown every attention I could desire or expect, both in the congress and in the general and special receptions.

The social features of the congress were unusually interesting. Besides the receptions given by the Queen and citizens of Rome, special privileges were afforded to members to see the ruins of historical Rome, as well as the art treasures that are preserved by church and state in this ancient city.

The work of the congress was mostly done in the various sections, and it remains to be seen how this compares with that of former congresses and what success has been achieved as a whole after the publication of the papers and the discussions thereon.

The congress closed on the 29th day of March in accordance with the programme laid down.

I transmit herewith copies of the papers read at the congress which I was able to obtain, and the official programme published by the executive committee.

Upon my return by the way of London, I made an inspection of the immigrant station at Blackwall, where were housed immigrants prior to their embarkation for the United States. The building, which is a large, three-story brick, with a large warehouse attached thereto, has been occupied in times past as a hotel, and is a good, substantial building, although not well designed for the purposes of an immigrant station. At the time of my visit there were some thirty or forty immigrants housed in the building. They were furnished with proper food, comfortable beds, and were generally well cared for. There is no disinfecting plant connected with this place, no facilities for the isolation of the sick suffering from contagious diseases, and the building is in close proximity to a railway station, where thousands of people are passing every day. The station, however, has now been abandoned, and the new station, which has been constructed by the American Line at Southampton, is used instead. I was unable, without remaining over another week in London, to visit this station at Southampton. However, I obtained from the vice-president, Mr. Wright, at New York, a complete description of the new immigrant home at Southampton, which shows that they have constructed a fine building, a complete disinfecting plant, and all the necessary accommodations for the housing and detaining of immigrants should necessity arise for their detention. These papers were referred to you, and the description of the plant was published in a number of the Abstract of Sanitary Reports.

En route, returning, I visited Paris, as well as London, and in accordance with your instructions reported to the Bureau such information as I was able to obtain of the consul-generals in those cities with reference to the prevalence of cholera in Europe.

Respectfully, yours,

H. W. AUSTIN,
Surgeon, Marine-Hospital Service.

The SURGEON-GENERAL, U. S. MARINE-HOSPITAL SERVICE,
Washington, D. C.

REPORT OF PASSED ASSISTANT SURGEON KINYOUN, DETAILED TO ATTEND THE EIGHTH INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY, AT BUDAPESTH, HUNGARY.

WASHINGTON, D. C., *November 30, 1894.*

SIR: In accordance with your order, dated August 14, 1894, directing me to proceed to Budapesth, Hungary, and there represent the Marine-Hospital Service at the meeting of the Eighth International Congress of Hygiene and Demography, I have the honor to submit the following report:

The congress was formally opened on Sunday, September 7, under the auspices of the general government and the municipality of the city of Budapesth, the minister of the interior being the president; the delegations from the various countries responding in behalf of their Governments, Dr. John S. Billings, U. S. A., responding for the delegates of the United States.

The actual work of the congress commenced on Monday, September 3, and continued daily from 9 a. m. to 3 p. m. There were no night sessions. This time was devoted to social entertainment.

The chief interest of the congress was centered in the sections which dealt with questions relating to the etiology of disease, and to preventive medicine. These sections were always crowded. Perhaps there has never been a more brilliant assemblage of scientists at any meeting of the congress than those attending this. The delegations from the several countries of Europe were composed of men whose reputation was world-wide.

The demographical section was poorly attended, and little or no interest was manifested in the proceedings save by the English contingent. The nature of the proceedings partook more of a congress of bacteriologists than one indicated by its name.

The papers, reports, and discussions of the section of hygiene were all of interest, some of which have been made the subject of a previous communication.

The next important topic considered was an international report on diphtheria. The congress at its London meeting had appointed a committee for each country then represented, with instructions to make their reports with recommendations at the next convening of the congress. The most complete report was that of the German, under the direction of Professor Loeffler. The second of importance was that of the French, submitted by Professor Roux, of Paris. The Austrian report was short, concise, and clear, and was submitted by Professor Wiederhofer. The report for the United States made a good impression, especially that part dealing with the bacteriology of the disease, this being made by Professor Welch, of Johns Hopkins University. The English report was in many ways disappointing. It appeared very good if viewed from a standpoint of ten years ago. There was a unanimity of opinion on the principal points in the management and control of the disease. The American system (as it was termed) for making the bacteriological diagnosis was highly commended by all.

The great question of the day, "Immunity and immunization," was ably set forth in papers by Buchner, Metchnikoff, Loeffler, Behring, Roux, and Denys. The discussion following their papers was of great scientific and sociological interest. Professor Roux was given an ovation after his report on the serum-therapy of diphtheria. It was the most complete exposition of the subject, and embraced his experience for over four years in his laboratory and the treatment of six hundred cases of diphtheria. The mortality from this disease of cases admitted to the hospitals in Paris was over 50 per cent, and under the serum-therapy had been reduced to less than 26 per cent. This certainly opens up a broad field in the domain of preventive medicine.

Cholera was discussed in all its different phases, especially with reference to the variation of the spirillum with different epidemics, and also its vitality in water.

Metchnikoff and Gruber, of Vienna, held opposing views regarding the virulence. Gruber could not accept Pfeiffer's methods for an absolute diagnosis. Dr. Ernest Hart, of London, was to have read a paper on cholera before the general sessions, but was unable to do so in person. This duty devolved upon Dr. Hassan, of Calcutta. The same views were held by Dr. Hart in this paper as he had theretofore advanced, except, perhaps, that they were more strongly expressed, especially in certain parts of the address which dealt with cholera among the pilgrims. Professor Pagliani, of Rome, delivered a most interesting address on maritime quarantine, in which the management of cholera invasion by sea was ably presented. It appeared to me that he was thoroughly imbued with the spirit of United States quarantine methods, and spoke perforce of his convictions. The discussion of the paper was mild, but it gave some of the English delegation an opportunity to air their views on the absolute uselessness of quarantine measures.

Martin, of Paris, presented a very complete description of the management of infectious diseases in the city of Paris, the service of which he is chief. I transmit a copy of his paper for your information.

Dr. Celli, of Rome, brought to the notice of the congress a very interesting paper on pathogenic amœba, a subject which he has been for years investigating.

Dr. Laveran also brought out some new points concerning malaria.

No paper was offered on yellow fever.

While attending the congress I had the good fortune to meet several physicians from Russia and from the provinces of Austro-Hungary and Germany, which were at that time infected with cholera. It was their opinion that cholera would exist for two seasons at least in the Russian provinces, and perhaps for another season in Galicia and Eastern Prussia. Italy would be endangered should the disease advance further south.

The congress was formally closed on Sunday, September 9, by the president and other officers. It became my duty to return the thanks of the delegates from the United States to the president and secretary, and to the people of Budapesth, for their courtesies.

As my orders contemplated a visit to the different laboratories of Europe for the purpose of familiarizing myself with the different methods, etc., I first communicated with Professor Tizzoni, of Bologna, requesting the privilege of working in his laboratory. After considerable delay I was informed that it was not possible to accommodate anyone in his laboratory because of the want of room. He would, however, be pleased to see me at any time after November 15 for the purpose of inspecting his work. I had in the meantime accepted Professor Roux's invitation for the course of instruction in the production of the diphtheria antitoxin, which would militate against my going at that time, so his invitation was declined with regrets. On leaving Budapesth I went to Vienna, Prague, and Munich, visiting the several laboratories of these places and remaining only so long as was necessary for me to familiarize myself with their methods of work.

On completion of this duty I proceeded to Paris, where I commenced my study in the treatment of diphtheria and in the preparation of its antitoxin. A special report of this part of my tour of duty has been transmitted.

From Paris I went direct to Berlin, where I remained for three weeks. I was given the full privileges of the Hygienic Institute and Professor Koch's Institute for Infectious Diseases. In the latter I had abundant opportunities given me for observing the treatment of diphtheria by the "heilserum," as it is called there.

I next visited the Hamburg Hygienic Institute, for the purpose of familiarizing myself with the new system of water filtration and their laboratory methods; also to interview Professor Rumpf concerning his method of the treatment of typhoid fever with the toxins of certain bacteria.

I then proceeded to London, visiting the several laboratories, and on completion of this work proceeded to rejoin my station.

Respectfully submitted.

J. J. KINYOUN,
Passed Assistant Surgeon, Marine-Hospital Service.

The SURGEON-GENERAL U. S. MARINE-HOSPITAL SERVICE,
Washington, D. C.

REPORT OF SURGEON BAILHACHE, DETAILED TO ATTEND THE MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION AT MONTREAL.

NEW YORK, N. Y., *October 2, 1894.*

SIR: I have the honor to report that the meeting of the American Public Health Association, which convened in Montreal, Canada, on the 25th-28th ultimo, and to which I was detailed as a representative of the United States Marine-Hospital Service, was largely attended by the State and municipal health officers and sanitarians of the United States and Mexico and the Provinces of Canada. The meeting was of unusual interest by reason of an official visit made by the members of the association to the quarantine station at Grosse Isle, some 30 miles below Quebec, on the river St. Lawrence. This station compares favorably in its equipment and management with the best upon our own coast and is ample for the protection of Canada against the introduction of contagious and infectious diseases, thereby giving the United States a guaranty of reducing to a minimum all danger of such diseases entering this country from that direction.

There was no legislative action recommended by the association, although the president of the board of health of New Orleans introduced and desired the adoption of a set of resolutions censuring the Federal Government, and particularly the Marine-Hospital Service, for its alleged interference with State and municipal boards of health in their management of quarantines, which were at first modified to the effect that the question of quarantine was too important a matter for a division of responsibility, and recommending a union of Federal, State, and municipal authorities in preventing the introduction of disease from abroad, but the whole subject was finally disposed of by a unanimous vote that the resolutions be "laid upon the table."

Very respectfully,

PRESTON H. BAILHACHE,
Surgeon, Marine-Hospital Service.

The SURGEON-GENERAL U. S. MARINE-HOSPITAL SERVICE,
Washington, D. C.

SPECIAL DETAIL OF MEDICAL OFFICER IN CONNECTION WITH THE FORD'S THEATER DISASTER.

By a resolution of the United States Senate, December 14, 1893, a select committee of five Senators was appointed "to investigate the Ford Theater disaster and report to the Senate whether in law, equity, or justice the Government should compensate the persons injured or killed by that disaster, or their representatives; and if it should be so decided that they should be compensated then the committee shall investigate each individual case and report the amount of compensation that should be allowed in each case."

In accordance with the wish of the committee the Surgeon-General of the Marine-Hospital Service was directed to detail an officer, to act in connection with a surgeon of the United States Army and a surgeon of the United States Navy, to assist in the investigation. This board was directed to report to the Hon. Isham G. Harris, United States Senate, chairman of the select committee. Its duty was to determine the degree of disability of those injured.

The board had its first meeting in April, 1894, and several during the months Congress was in session. It is still organized and subject to the orders of said committee.

Surg. F. W. Mead was detailed to serve on this board.

RECALL OF MEDICAL OFFICERS FROM FOREIGN PORTS.

The medical officers detailed by the President for foreign duty in the offices of consuls during the cholera epidemic of 1893, eleven in number, were recalled on December 1, 1893, with the exception of one, who remained abroad to transmit information. The services of the acting assistant surgeons necessarily employed for temporary duty in the United States during the absence of these officers have been discontinued.

The above statement illustrates a valuable feature of the Marine-Hospital organization, whose regularly commissioned officers may be detailed in emergency to unusual and important posts, their places being filled by younger officers of the regular corps, whose ordinary duties are in turn temporarily performed by acting assistant surgeons serving under their direction. It is pertinent to add that since the passage of the act of Congress approved February 15, 1893, granting additional powers and imposing additional duties upon the Marine-Hospital Service, notwithstanding the large amount of additional work thus imposed, the regular corps of the Service has been increased by only three additions.

It may be of interest also to record here the following statement regarding the medical corps and employees of the Marine-Hospital Service: At the present date the corps of medical officers commissioned by the President numbers 63, there being 16 surgeons, 31 passed assistant surgeons, and 16 assistant surgeons. The acting assistant surgeons number 84. There are 32 hospital stewards, 250 hospital attendants, and 110 quarantine employees. The number of quarantine employees varies according to the season, the force at the quarantine stations being materially reduced during the winter months. The Service has under its control 19 marine hospitals of its own. Beside these there are 11 contract hospitals in which Marine-Hospital patients are under the charge of officers of the regular corps; 58 contract hospitals in which patients are under the charge of acting assistant surgeons of the Service, and 9 hospitals in which Marine-Hospital patients receive care and treatment under contract with the authorized officials of said hospitals.

An illustration of the growth of the work of the Service is furnished by a statement of its disbursements, which in 1879 amounted to $375,164.01, while in the fiscal year 1894 the disbursements were $1,653,064.

The value of the services of the officers of this corps is shown by an enumeration of their various duties, as follows:

(1) The management of hospitals and relief stations for the care of sick and disabled seamen of the merchant marine of the United States, over 50,000 seamen being treated annually.

(2) The active management of ten national quarantine stations, including the steam vessels belonging thereto. These national quarantine stations, particularly in the South, are the refuge stations for neighboring local quarantines, and for a large number of years have done the greater part of the actual cleansing and disinfecting of infected vessels. In the last fifteen years their hospitals have, with but few exceptions, received and cared for all the yellow-fever patients taken from vessels entering United States ports.

(3) Inspection of local quarantines, under the act of February 15, 1893.

(4) Investigation of reported cases of epidemic disease, including bacteriological examinations and local sanitary conditions.

(5) The suppression of epidemic diseases and enforcement of the interstate quarantine regulations.

(6) The collection and dissemination of mortality statistics and sanitary information.

(7) Scientific investigation into the causes of disease.

(8) The examination of pilots for color-blindness.

(9) Physical examination of keepers and crews of the life-saving stations; professional examination of their claims on account of disability and their treatment in hospital.

(10) Physical examination and treatment of the officers and crews of the Revenue-Cutter Service, both prior and subsequent to enlistment, and medical and surgical service under special detail on revenue cutters engaged in Arctic cruising, or on other long voyages.

(11) Physical examination of immigrants under the law excluding those afflicted with contagious disease.

(12) Service in the office of consuls at foreign ports to assure the accuracy of bills of health given to vessels.

(13) Miscellaneous duties imposed from time to time by the Treasury Department.

AID TO OTHER BRANCHES OF THE GOVERNMENT SERVICE.

The following is a summary of the aid given to other branches of the Government service during the fiscal year 1894:

(1) *Aid to the Life-Saving Service.*—During the year ended June 30, 1894, there were 1,076 surfmen and keepers examined, of which number 22 were rejected for physical causes; 170 claims for pensions and other benefits provided by the act of May 4, 1882, made by keepers and crews of life-saving stations have been passed upon in the office of the Surgeon-General.

The benefits of the marine hospitals have been extended to the keepers and surfmen of the Life-Saving Service in accordance with the following law and circular based thereon:

AN ACT extending the benefits of the marine hospitals to the keepers and crews of life-saving stations.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the privilege of admission to and temporary treatment in the marine hospitals under the control of the Government of the United States be, and is hereby, extended to the keepers and crews of the Life-Saving Service under the same rules and regulations as those governing sailors and seamen, and for the purposes of this act members of the Life-Saving Service shall be received in said hospitals and treated therein, and at the dispensaries thereof, as are seamen of American registered vessels; but this act shall not be so construed as to compel the establishment of hospitals or dispensaries for the benefit of said keepers and crews, nor as establishing a home for the same when permanently disabled.

Approved August 4, 1894

[Circular.]

TREASURY DEPARTMENT,
OFFICE OF SUPERVISING SURGEON-GENERAL, U. S. M. H. S.,
Washington, D. C., August 31, 1894.

To medical officers of the Marine-Hospital Service, acting assistant surgeons, keepers and surfmen of life-saving stations, and others:

In accordance with the act of Congress approved August 4, 1894, entitled "An act extending the benefits of the marine hospitals to the keepers and crews of life-saving stations," the following regulations are hereby promulgated:

1. Under the terms of said act keepers and surfmen of the Life-Saving Service will be treated in the marine hospitals under the control of the Government of the United States, but not in contract hospitals nor at their homes, and will receive dispensary or out relief only at the dispensaries connected with the said marine hospitals.

Following is a list of the hospitals and offices (dispensaries) where applicants will be received for treatment:

Baltimore, Md., office, custom-house; hospital, city.
Boston, Mass., office, custom-house; hospital, Chelsea.
Cairo, Ill., hospital and office together.
Chicago, Ill., office, custom-house; hospital, Lake View.
Cincinnati, Ohio, hospital and office together.
Detroit, Mich., office, 90 Griswold street; hospital, city.
Evansville, Ind., office, custom-house; hospital, city.
Key West, Fla., hospital and office together.
Louisville, Ky., office, custom-house; hospital, city.
Memphis, Tenn., office, custom-house; hospital, city.
Mobile, Ala., office, custom-house; hospital, city.
New Orleans, La., office, custom-house; hospital, city.
New York, N. Y., office, Battery, city; hospital, Stapleton, Staten Island.
Portland, Me., office, custom-house; hospital, East Deering.
Port Townsend, Wash., office, Water street; hospital, city.
San Francisco, Cal., office, custom-house; hospital, city.
St. Louis, Mo., office, old custom-house; hospital, city.
Vineyard Haven, Mass., hospital and office together.
Wilmington, N. C., office, custom-house; hospital, city.

2. Applicants for either hospital or office treatment should present themselves at the marine-hospital office, but may proceed to the hospital direct when circumstances so demand.

No transportation will be furnished except by ambulance, in cases requiring its use, between said office or hospital and the most convenient railroad station or steamboat landing.

3. An applicant must present a certificate, signed by a keeper, district superintendent, or assistant inspector of the Life-Saving Service, in the form prescribed by the Department, certifying to his services as a keeper or surfman of a life-saving station, and giving other satisfactory evidence that he is entitled to treatment under the regulations. When it is impracticable to obtain the certificate, signed as above required, an affidavit of the applicant as to the facts of his employment may be accepted. The applicant must be required to sign his name to the certificate before it is signed by the officer granting it.

4. The above certificate must show that the applicant is borne upon the rolls of the Life-Saving Service at the time of making the application. Applicants who have been discharged from the Life-Saving Service, being no longer members thereof, will not be granted treatment.

5. During the period when the life-saving stations are open, sick or injured keepers and surfmen will be admitted to hospital or dispensary treatment, according to the necessities of the case.

6. During the months when the stations are closed, sick or injured keepers or surfmen will be admitted as above, unless the sickness or injury is the result of employment not connected with the United States Life-Saving Service. If injured or taken sick during said months as a result of employment not connected with the Life-Saving Service, treatment will not be granted.

7. Under the terms of the act, a marine hospital will not be considered a home for sick or disabled keepers or surfmen of the Life-Saving Service. Temporary treatment alone is permited, and no keeper or surfman will be retained in hospital longer than ninety days unless special authorization is given by the Department.

8. In addition to the above, the regulations of the Marine-Hospital Service governing admission to and treatment in marine hospitals shall apply to the beneficiaries of said act of August 4, 1894. Keepers and surfmen will be entitled to the ordinary provisions only of the hospitals, and will comply with all rules and regulations relating to discipline and management.

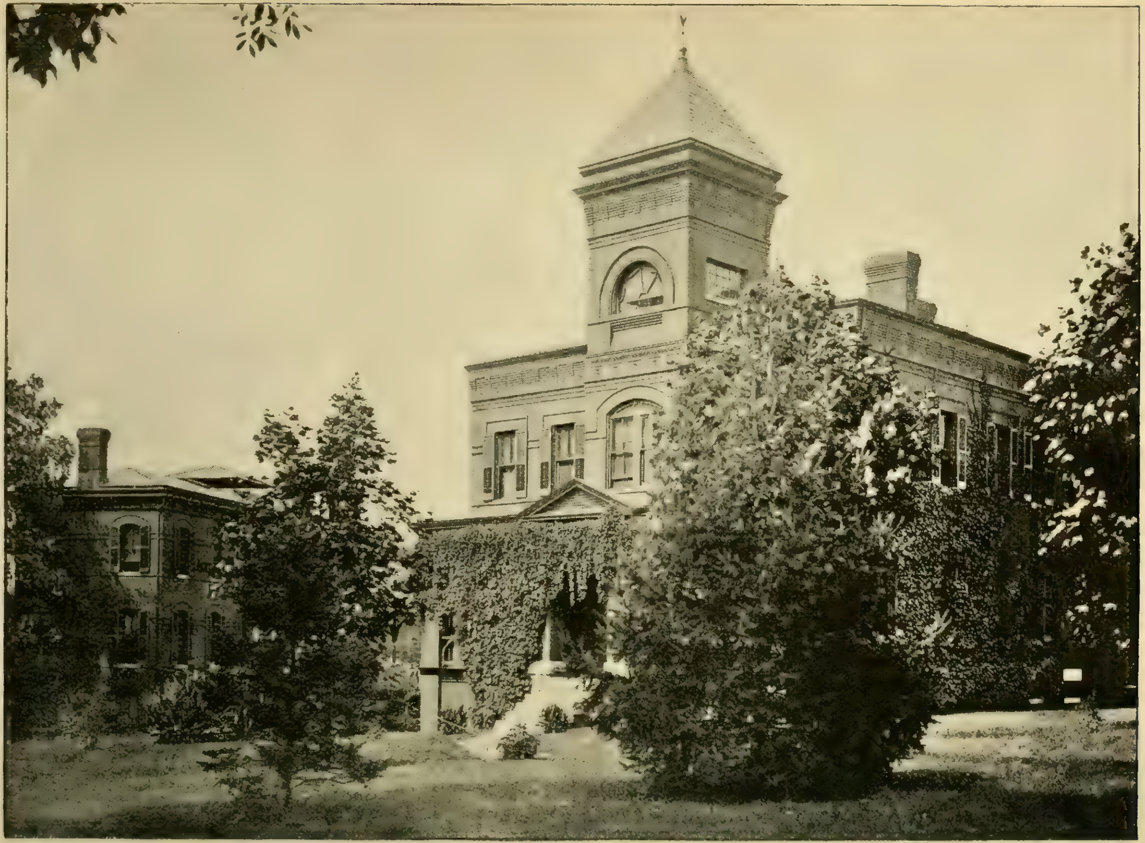
WALTER WYMAN,
Supervising Surgeon-General, Marine-Hospital Service.

Approved:
J. G. CARLISLE, *Secretary.*

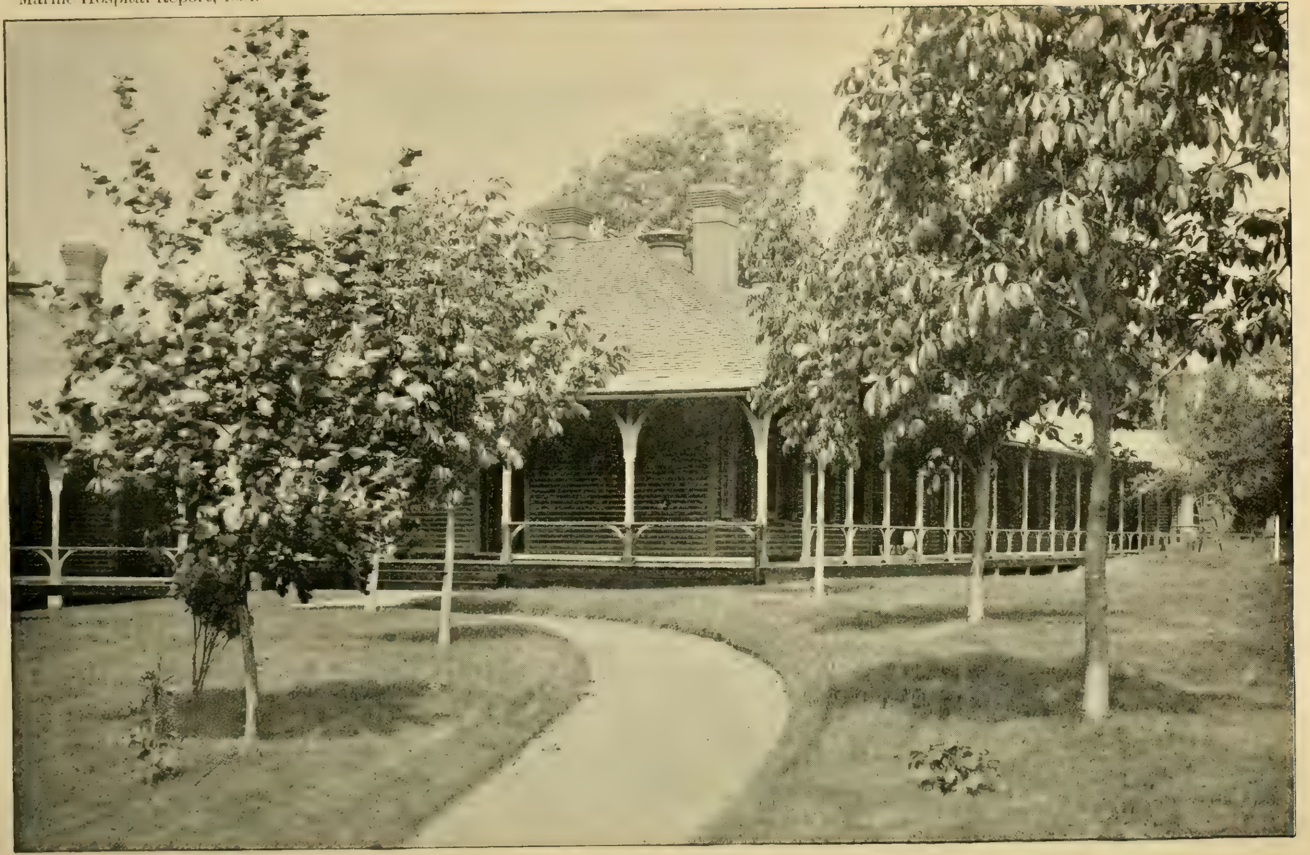
(2) *Aid to the Inspection Service of Steam Vessels.*—During the year 628 pilots were examined with regard to their ability to distinguish colors and 26 rejected on account of color-blindness.

(3) *Aid to the Revenue-Cutter Service.*—Five boards composed of medical officers of the Marine-Hospital Service have been convened during the year for the physical examination of officers of the Revenue-Cutter Service and of candidates for appointment as cadets in that service. There were 220 seamen examined physically as a prerequisite of their enlistment, of which number 21 were rejected. In addition to the above, a medical officer was detailed for duty on the revenue cadet bark *S. P. Chase* on her training cruise to Corunna, Spain, and the Azores.

(4) *Aid to the Immigration Service.*—Medical officers of the Marine-Hospital Service have been specially detailed at the following ports for



U. S. MARINE HOSPITAL, BALTIMORE, MARYLAND—EXECUTIVE BUILDING.



U. S. MARINE HOSPITAL, BALTIMORE, MARYLAND—WARDS.

medical inspection of immigrants, namely: Boston, New York, Philadelphia, and Baltimore. At all other ports the regular officer on duty at the station is available for this service as occasion requires.

The following is a summary of the reports received from medical officers stationed at the ports mentioned, showing the number of immigrants examined and rejected, etc., during the fiscal year 1894:

Portland, Me.—Examined, 129; rejected, 2.

Boston, Mass.—Examined, 53,358; rejected, 20.

New York, N. Y.—Number of steerage passengers inspected upon arrival, 231,662; number of these physically examined, certified, and sent to hospital, 1,081; number of these physically examined, certified, and sent before the board of special inquiry for action, 527; number of these physically examined and recorded (for minor defects), 1,630; number of landed cases applying for relief which were certified and sent to hospital for treatment, 471; number of landed cases applying for relief which were physically examined and certified for deportation, 215; number of landed cases applying for hospital relief examined and rejected, 151; total rejected, 366; number of patients in hospital at beginning of year, 40; number of patients admitted to hospital during year, 1,552.

Philadelphia, Pa.—Examined, 19,857; rejected, 52; total number treated, 86.

Baltimore, Md.—Examined, 13,427; rejected for physical causes, 6; temporarily detained in hospital, 86.

New Orleans, La.—Examined, 968; rejected, 3.

MARINE HOSPITALS AND RELIEF FURNISHED.

During the fiscal year ended June 30, 1894, the total number of patients treated by the service was 52,803, of which number 13,725 were treated in hospital, the remainder, 39,078, being dispensary, or out-patients. Ninety-four seamen of the merchant marine were examined before shipment as to their physical fitness, and 5 were rejected.

The following is a statement of repairs and alterations made during the fiscal year ended June 30, 1894, and of repairs and alterations still needed at the several hospitals:

Hospital at Baltimore, Md. (erected 1887).—Surg. G. W. Stoner reports the following repairs and alterations made in the building and grounds:

The old well on hospital grounds thoroughly cleaned, old wooden curbing removed, and the well walled up with stone; new outside door to coal cellar of boiler house; repairs and painting of steps and floors of verandas and corridors of hospital buildings and drip shelves to kitchen sinks; repairs made to brick piers and chimneys, and to rear wall of third ward; new water gutters put on roof of first ward, and all gutters and conductors of the several buildings repaired; shed addition built to stable, stalls with ground floors; stairway and feed bins put in feed room, and an old stall space converted into ambulance room; new fence put up on one side of hospital grounds, and other portions repaired; flagstaff repainted; new water-closets and bath tub put in surgeon's house, new floor in kitchen, and alterations made in brickwork of cellar doorway.

A considerable proportion of the minor repairs were made by the hospital attendants without additional expense except for material purchased.

The total cost of all the foregoing repairs was $1,324.19.

The repairs and alterations at present necessary are water-pipe connection and alterations in buildings to introduce water from the city main, said main having been extended along Remington avenue as far as the gate of the hospital grounds; the necessary cost will be about $1,000. Painting the inside of the buildings, repairing the walls and cementing the floors of laundry and engine rooms, renewing verandas in the rear of wards, and fitting up necropsy room will probably cost $2,000. Other necessary repairs during current year will cost about $500

Hospital at Boston, Mass. (erected 1860).—Surg. H. W. Sawtelle makes the following statement of repairs and alterations:

Heating apparatus· Large elbow under one of the boilers replaced; all the iron blow-off pipes from boiler to return tank, feed-water heater, and drain in boiler pit taken up and replaced with 2-inch heavy brass pipe. Furnaces of boilers repaired; new arch and cheek plates put in; steam pump repaired; cistern built in boiler pit for drainage by hand pump. Cost, $310.

Portion of return pipe indirect radiator replaced; new valves for duplex pump; air valves for radiators. Cost, $8.97.

Miscellaneous: Repairs to slate roof; cost, $30. Entire exterior of hospital building and boiler house repainted, oiled two coats, and penciled. Ironwork of piazzas on all four sides of building, iron pilasters and architraves of windows, sash frames, etc., painted two coats, white lead and oil. Smokestack cleaned and painted two coats. Flooring in Otis, Ingalls, Jarvis, Austin, and Townsend wards, smoking rooms on second floor, and passage leading to lavatory on third floor removed and replaced with new flooring. Additional granite step, above grade, put on two stairways leading to basement in rear of building. Coal shed repaired by cutting off decayed posts, and new cedar posts put in ground 4 feet to support cut posts; eaves of roof extended 2 feet; the entire roof reshingled and painted. Asphalt sidewalk laid from main entrance to surgeon's quarters. New wire lawn fence erected between hospital grounds and graveyard. Total cost, $4,987.

Laundry: New Nagle engine, brass washer, steam mangle, centrifugal extractor, complete; cost, $1,350.

New stable erected; total cost, $3,691.

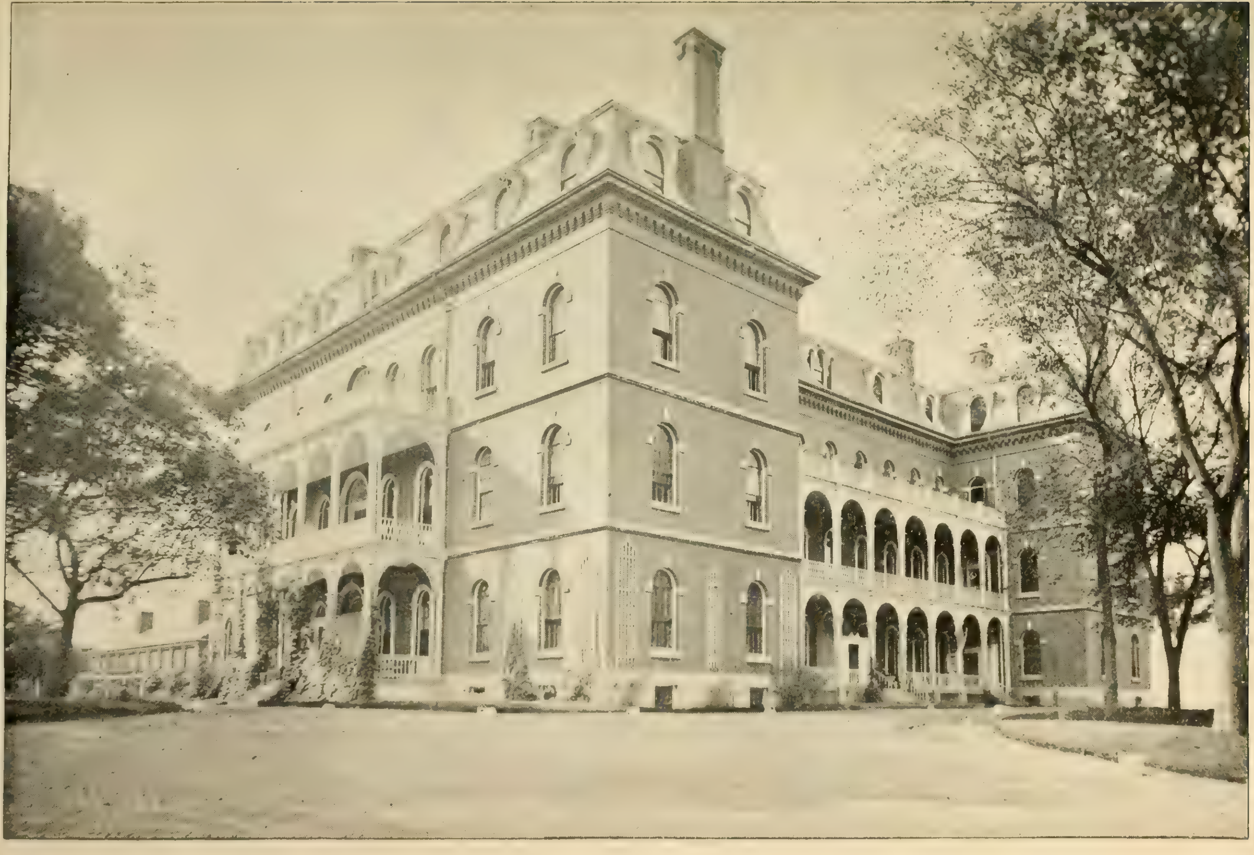
Many minor repairs, such as painting and graining, whitewashing, and light work on plumbing and heating apparatus has been performed by the hospital attendants.

Alterations and repairs required during the fiscal year ending June 30, 1895, together with estimated cost:

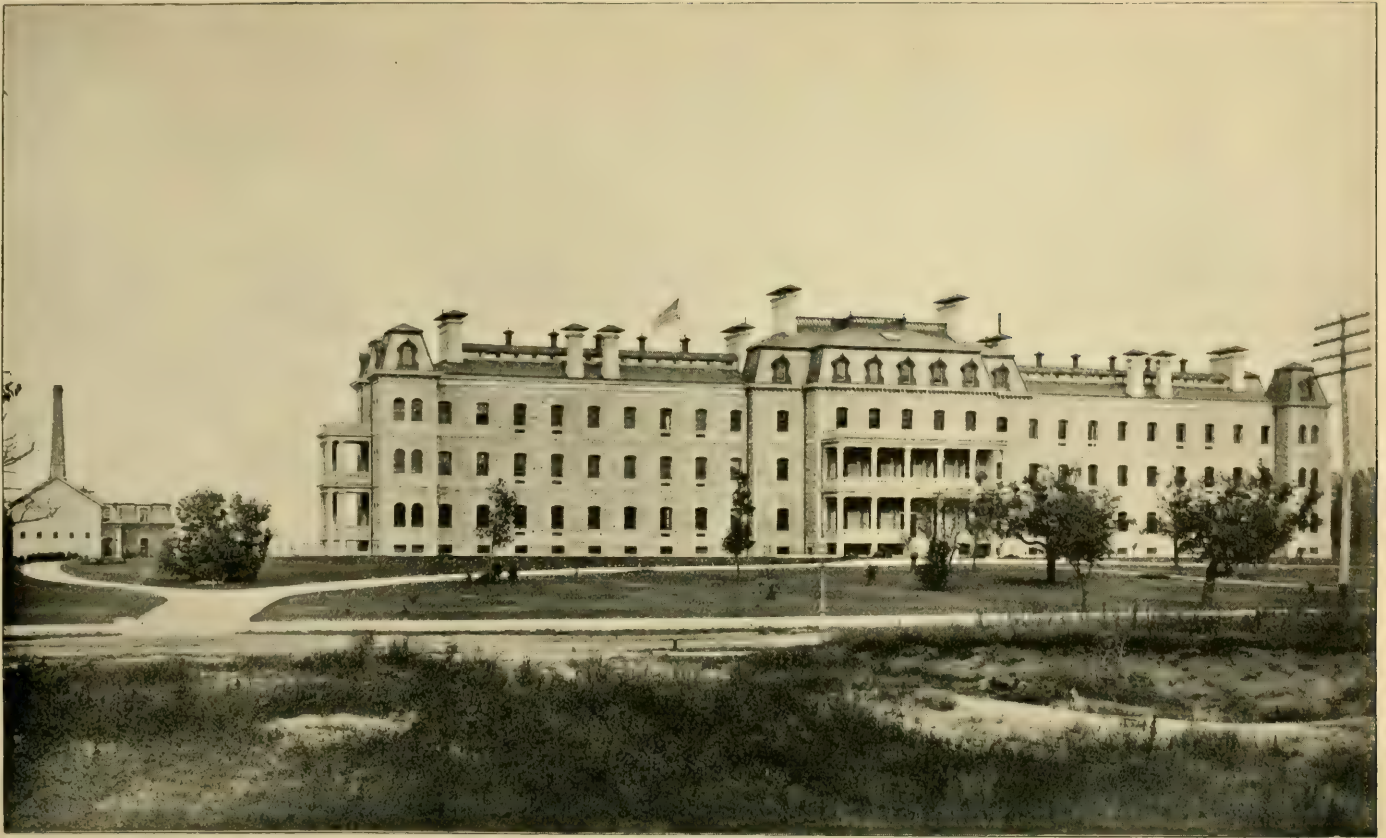
A new autopsy room is much required; estimated cost of fitting up a room in one of the outbuildings, $850. It has been necessary to make some repairs to the iron tanks on account of corrosion. Provision should be made for new tanks of larger size; estimated cost, $850.

The hospital should be lighted with electricity. The cost of a plant, with power house of sufficient size to accommodate the laundry, would be about $6,000. The laundry has always been located in the basement of the hospital, under the passed assistant surgeon's quarters, and for obvious reasons should be removed to the hospital building. An invalid's elevator is much needed; estimated cost, $1,000. The strip of land 43 feet wide extending to the marine-hospital grounds recently transferred by the Navy Department for a roadway to the hospital should be opened for use. Plans, specifications, etc., have been forwarded to the Department; estimated cost, $3,500. The old wire fence on the north end of the reservation is unserviceable, and should be replaced by a high board fence; estimated cost, $350.

The entrance hall floor is in bad condition, and should be replaced by encaustic tiling, quartered oak, or marble; estimated cost, $650. New flooring is needed for two outbuildings, the ironing room, and basement of the surgeon's quarters; estimated cost, $200. New flooring is also needed in steward's dining room, hall, and passage on second floor, the Vansant ward, and two passages on third floor, and in the dispensary and reception room; estimated cost, $440. New tin on verandas, bath tub in surgeon's quarters, new brass feed pipe for steam boilers, new copper down spouts on boiler house; estimated total cost, $320.



U. S. MARINE HOSPITAL, PORT OF BOSTON, MASSACHUSETTS.



U. S. MARINE HOSPITAL, CHICAGO, ILLINOIS.

A separate house should be provided for the surgeon, for the fact that the hospital is frequently overcrowded and the quarters for medical officers are insufficient. An isolation ward is also required.

Hospital at Cairo, Ill. (*erected 1885*).—Asst. Surg. E. K. Sprague reports the following repairs and alterations:

The work reported in progress one year ago was completed October 3, 1893.

During the past fiscal year minor repairs were made upon the plumbing and the flagstaff.

There are needed for the current ficsal year a new floor in the laundry, dining room, and kitchen, stationary washtubs in laundry, a sink in pantry, iron castings in front of kitchen range, six new water-closets, and ventilators on roof of surgeon's house and laundry building. Repairs are necessary on the driveways, and shade trees should be planted. The estimated total cost of these repairs and alterations will probably not exceed $1,900.

Hospital at Chicago, Ill. (*erected 1873*).—Surg. John B. Hamilton reports the following repairs made to this hospital during the past fiscal year; also those necessary for the year ensuing:

Under contract approved September 12, 1893, repairs to the amount of $8,936 were made under the following specifications: The present wood floor in the main hall on the east side of the central portion of the building to be removed and substituted by a new floor of artificial stone.

Tiling: All bathrooms, including floors under closets and urinals, to be tiled with marble, laid in cement mortar; bathroom in surgeon's quarters to have encaustic instead of marble tiling. The walls of toilet rooms will be wainscoted up from floor 5 feet, and Italian marble substituted for the wooden partitions of closets and urinals.

Stonework: The stonework of porticos to be lead calked, and necessary gutters cut in stone flagging to secure proper drainage. All exterior stonework to be repointed wherever necessary with pure Portland cement. The stone coping to be reset wherever required on proper lines.

Engine house: The walls of the engine house are to be pointed and tuck pointed, as also the smokestacks.

A new maple floor to be laid in the Miller ward. New floor in stable of 2-inch plank. New floor and doors for coal shed, the doors to be hung on rollers of approved pattern, and the roof to be reshingled.

Painting: The surgeon's quarters, surgical operating room, six wards, and the walls, woodwork, and side stairs on the north and south sides to be repainted. All tin and copper roofing and gutters of the main building, also roof of engine house, to be repainted two coats. All new woodwork named in specification to be painted with white lead and oil. The wainscoting in bathrooms and smoking rooms to be painted with porcelain paint. The outside of the stable and coal shed to be repainted.

Steam heating: The pipes under the wood floor of the basement are to be lowered 4 inches, inclosed in a brick trench, and covered with a cast-iron covering, with iron rings to provide for easy removal.

Sewerage: There will be constructed on the north side of the engine house two drains, 200 feet long and 6 inches in diameter; these drains to connect with catch basins made of good sewer brick.

Flagstaff: The present flagstaff to be removed from top of building and a new one placed on the grounds east of the building.

Repairs were made to the Hyatt water filter, and to the boilers and cooking range. The pumps in the engine house were also repaired.

The following alterations and repairs, stated in letter of July 10, 1893, are still necessary: A new operating room, planned according to modern ideas, should be built. The room now used for that purpose is not only unsuitable but is needed for other uses. There is no reception room in this hospital where patients can see their friends. The operating room if built of stone, to correspond with the outside of the building, would cost $10,000 complete.

I respectfully renew my recommendation for the building of a suitable cottage for the commanding officer. The quarters are at present insufficient in case a full complement of officers are serving at the station. To make it sightly, and make it correspond with the main building, it should have a stone facing, at least. An electric-light plant would be very desirable, giving better light and more security against fire.

The fences about the grounds are fallen down and should be replaced with a low brick wall on two sides. The street in front of the reservation is the only unimproved street in the vicinity. The city has macadamized one-half of the street, but the side next to the hospital remains in its natural state, a constant eyesore and an annoyance, and the cause of much unpleasant comment on the part of the people passing the institution and those living in the neighborhood.

Hospital at Cincinnati, Ohio (*erected 1884*).—P. A. Surg. P. C. Kalloch makes the following report of repairs and alterations made upon the hospital and grounds at this station:

The windows, doors, and other woodwork of basement of main building were painted at a cost of $57; a new manure pit was built at a cost of $40; the stable was repaired and a new floor put in; the floor in the lower ward and kitchen was renewed where found necessary. The main building was painted outside and the wards inside; the Pearl street entrance was repaired, the iron railing of main entrance removed, and other miscellaneous repairs, in accordance with specifications, were made at a total cost of $2,625.

The roofs of main building, grounds, and cottage were repaired and painted at a cost of $76; two ventilating windows were placed in the surgeon's cottage at a cost of $55; a new hot-water boiler, with all connections, was put in, costing $510; the plumbing in the acting assistant surgeon's quarters was put in a sanitary condition at a cost of $65; the steward's quarters were repaired and altered at a cost of $293; a new water meter was purchased at a cost of $240; the water-supply pipes were renewed at a cost of $625; the acting assistant surgeon's quarters were altered at a cost of $75; the down spouts of the wards repaired at a cost of $26; and a pressure regulator was attached to the supply pipe, costing $48.

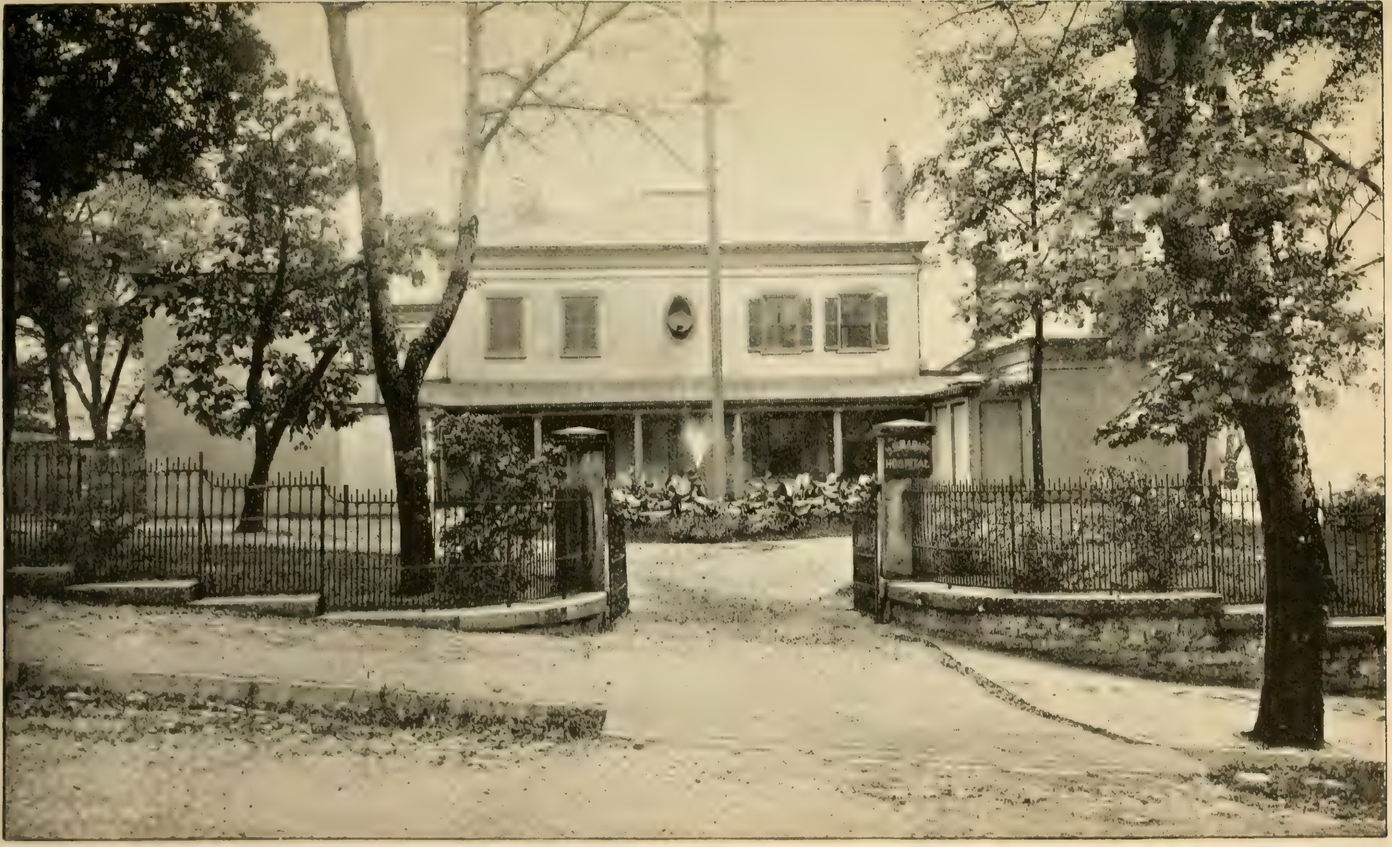
The following repairs and alterations are necessary for the ensuing fiscal year, as stated by the medical officer:

Removal of partitions between small rooms, $50; excavation of laundry, $117; extending area ways, $935; closets for linen and attendants' effects, $164. This has already been recommended by an inspector of public buildings. Steam laundry plant, $3,700; painting, $790; addition of one story to cottage, $1,100; minor repairs to main building and east ward, $110; repairs to walks, steps, and gutters, $550; and repairs to heating apparatus, $3,200.

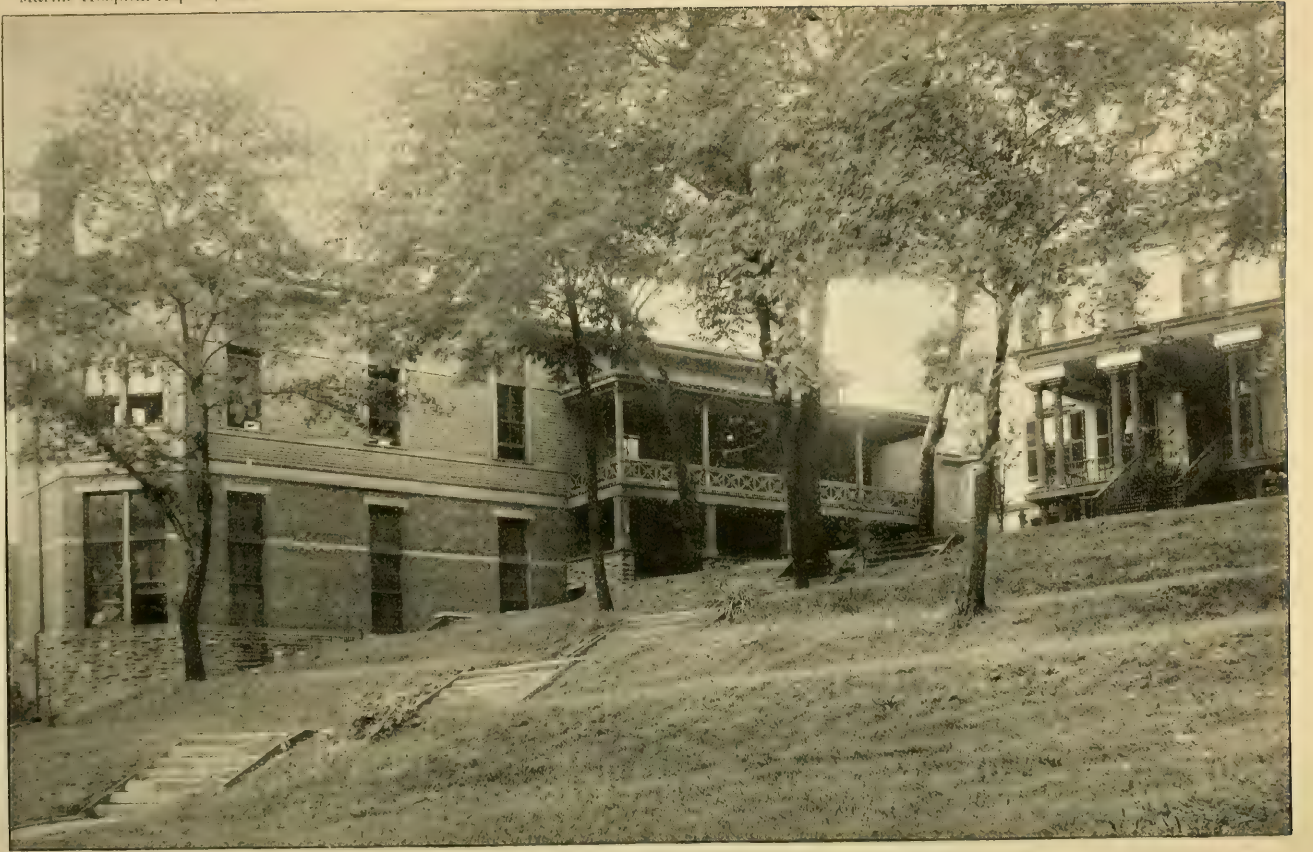
Hospital at Detroit, Mich. (*erected 1857*).—Surg. W. H. H. Hutton makes the following report of repairs and alterations made at this hospital for the fiscal year ending June 30, 1894:

Plumbing to the amount of $83.77. A new set of grate bars was put into the heating apparatus at an expense of $60.

Painting: All the woodwork in the six wards was painted, floors stained and oiled, walls and ceilings painted and calcimined, the floors of the three hallways were stained and oiled, ceilings calcimined, all the bathrooms and water-closets were painted, as were the verandas. A number of rooms in the officers'



U. S. MARINE HOSPITAL, CINCINNATI, OHIO EXECUTIVE BUILDING AND GATEWAY.



U. S. MARINE HOSPITAL, CINCINNATI, OHIO—EXECUTIVE BUILDING AND ONE WARD.

quarters were painted and calcimined. The barn, engine house, the iron railing in front of hospital, and the hospital roof were painted. The material used in doing this painting cost $220.80; the work was performed by the attendants.

In my report to the Bureau dated July 6, 1893, I stated that there was no means of ventilating the hospital except by the doors and windows, and I recommended that a steam chamber be placed in the basement through which exterior air could be forced by a blower or fan, and the warm air distributed through all parts of the hospital. The foul air could make its exit by means of a shaft placed in the center of the building with a suction funnel on the top, such as is used to ventilate steamship compartments. As the flues and the openings in the chimneys already exist, the only portion to be constructed would be the steam chamber and the central extracting shaft, which could be built at a probable cost of $2,000.

I also stated the plumbing in the hospital was in a bad condition, and that the old bowls and wash sinks should be taken out and replaced by new ones. The floors and walls of the water-closets to the height of 3 feet should be laid with glazed tiling. The probable cost will be about $1,000.

The old bath tubs in the hospital should be replaced by those of new pattern. The kind needed would cost about $250.

The stable, barn, and ambulance floors are in poor condition and need repair.

The outside of the hospital should be repainted. The original color has faded and become black from the smoke and dust of the city. The probable cost for the work will be about $500.

Hospital at Evansville, Ind. (*erected 1891*).—P. A. Surg. P. M. Carrington makes the following report of this hospital:

Minor repairs only have been made during the past fiscal year, amounting to $330.11. Of the repairs and alterations needed, the matter of first importance and necessity is the retaining wall for the protection of the north side of the reservation. The reservation fence stands just on the border line where the embankment, produced by grading and filling in, terminates abruptly; and the laundry building extends to within 2 feet of the decline. The fence is already undermined, and the foundation of the laundry building is gradually being encroached upon.

All of the hospital buildings require painting. The necessity for this work seems urgent. The brick chimney of the boiler house should be extended 15 feet higher, in the interest of economy and cleanliness, if the use of bituminous coal is to be continued. This chimney extends about 6 feet above the roofs of the buildings.

An additional bath tub is necessary in the quarters of the medical officer; new and larger sinks should be placed in ward dining rooms, as also in the hospital kitchen.

Cement or artificial stone sidewalks should be made from the hospital gate to the entrances of the various buildings.

Hospital at Key West, Fla. (*erected 1845*).—P. A. Surg. G. B. Young reports the following repairs made at this hospital during the past fiscal year:

Concrete floors have been laid in the basement of the main building, the exterior stairs repaired, changes made in door openings in basement, a new roof for the entire building, part of the exterior and interior of building painted, and miscellaneous repairs made to sash, blinds, and plastering. A second story has been added to the laundry building, a concrete floor laid, soapstone tubs put in place, and a force pump and tank connected with the cistern. A new cistern has been built and all gutters and pumps repaired or renewed. Tiled drains have been laid from kitchen and laundry to sea, and the sea wall put in good condition. These various repairs have aggregated $5,875.

The wooden fence that surrounds the reservation is in poor condition and beyond repair. It should be replaced by a low wire fence in a concrete base. The deadhouse occupies a prominent place in the front yard and is inconveniently located. It should be moved some 20 feet south.

The isolating ward and all other outbuildings are rapidly deteriorating for lack of paint, and shingles on the roofs of several of the buildings are dropping off.

A sink is urgently needed in the dispensary, with tank and force pump. The plastering in the kitchen should be replaced.

There is a large amount of painting and minor repairs necessary in order to preserve the work already done. Nearly all of this work can be done by the attendants if the material is supplied.

The fence, kitchen ceiling, and dispensary sink are urgently needed.

Hospital at Louisville, Ky. (*erected 1852*).—P. A. Surg. H. T. Goodwin makes the following statement of repairs and alterations made upon the hospital and grounds during the fiscal year ending June 30, 1894, and an estimate of necessary repairs, with cost, during the current fiscal year:

Painting exterior of hospital; cost, $740. One room made into an operating room—an oak floor laid, stationary and marble stand, sink with hot and cold water; cost, $84. A double gate of oak substituted for the old bar gate at eastern entrance; cost, $63. A partition in an unused ward to convert part of same into a storeroom, and a doorway made between two front rooms in second story; cost, $47. Painting five rooms on first floor, four on second, the hallways, and two wards; cost, $298. Old stable and carriage house torn down and a brick stable, carriage house, and deadhouse erected; cost, $1,147. New arches over two cisterns; cost, $88. Painting done by attendants; cost of material, $50.58. Repairs to plumbing, $120.74. Electric-bell system, $41.50.

The following is submitted for work considered necessary during the current year:

Heating apparatus, $3,500; repairs to brick walls urrounding reservation, $1,700; repairs to plumbing, $100; repairs to area and cellar walls, including an iron rail, $65; repairs to brick wall and fences, $200.

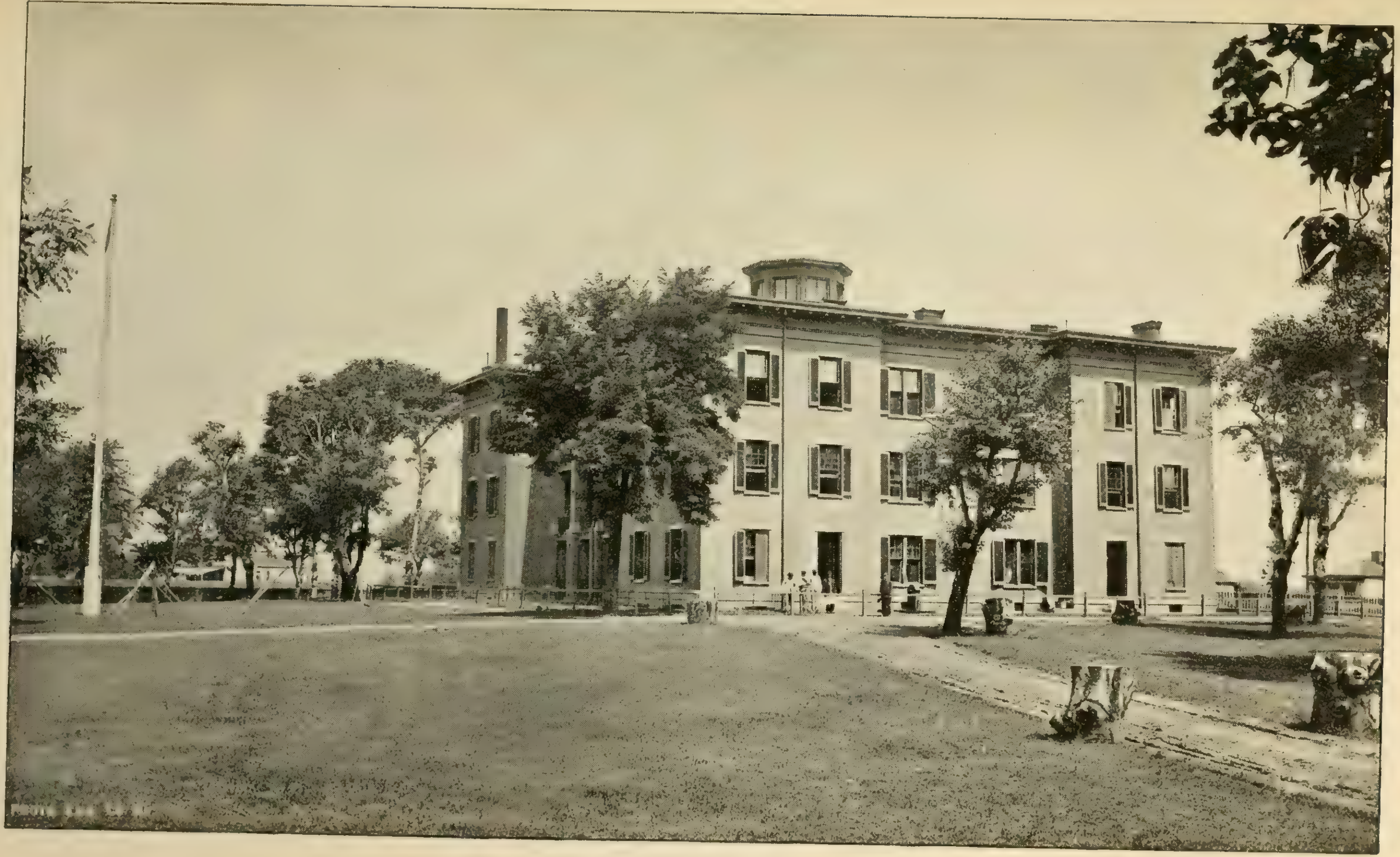
No expenditure has ever been made on the walks and approaches to the hospital. At present there is a sidewalk only on the street facing the south side of the reservation. On the other three streets there are only earth walks, which in rainy weather are ankle deep in mud. This wretched condition of the streets surrounding Federal property is the cause of constant and severe criticism. The estimated cost of grading and putting down a brick pavement is $2,500.

Hospital at Memphis, Tenn. (*erected 1885*).—P. A. Surg. A. C. Smith reports the following repairs made at this hospital during the past fiscal year:

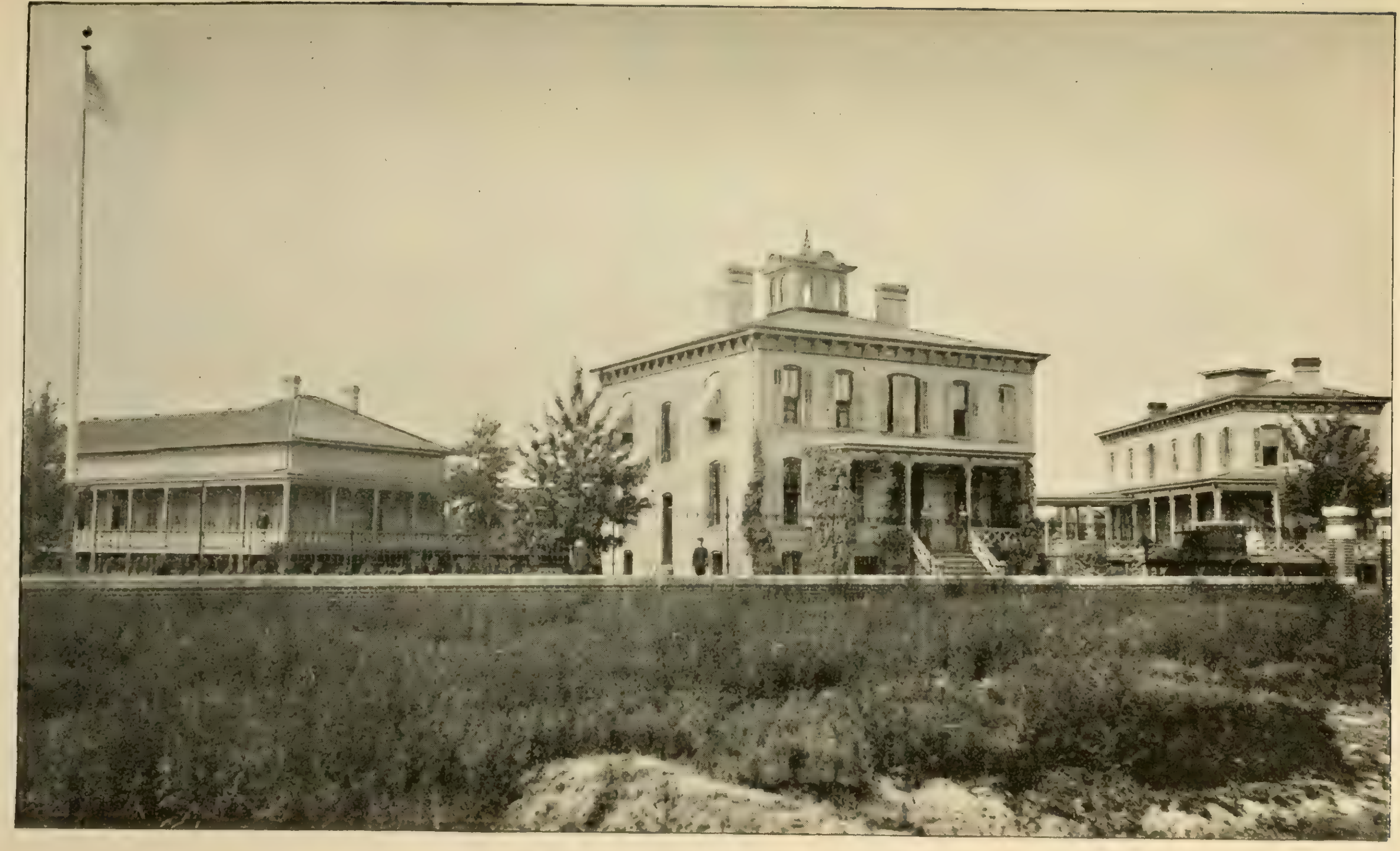
Hemp line and sash cord for halyards, $2.97; repairing the hospital sewer outside the grounds, $19.95; repairing leak in water pipe, $25.55; repairing three broken water-closets, $35; repairs to faucets, $2.80; repairs to waste pipe, $24.73; glass to replace broken windows, $8.92. Expenditure for the purchase of lumber, nails, etc., for the repair of fences, relaying floors of hospital kitchen and piazza of executive building, building tool house, and minor repairs, $68.20.

An expenditure was incurred under contract for laying new water-pipe, erecting fire hydrants, repairing electric bells, repairing gates, and placing a bell at small gate. Total cost, $482.

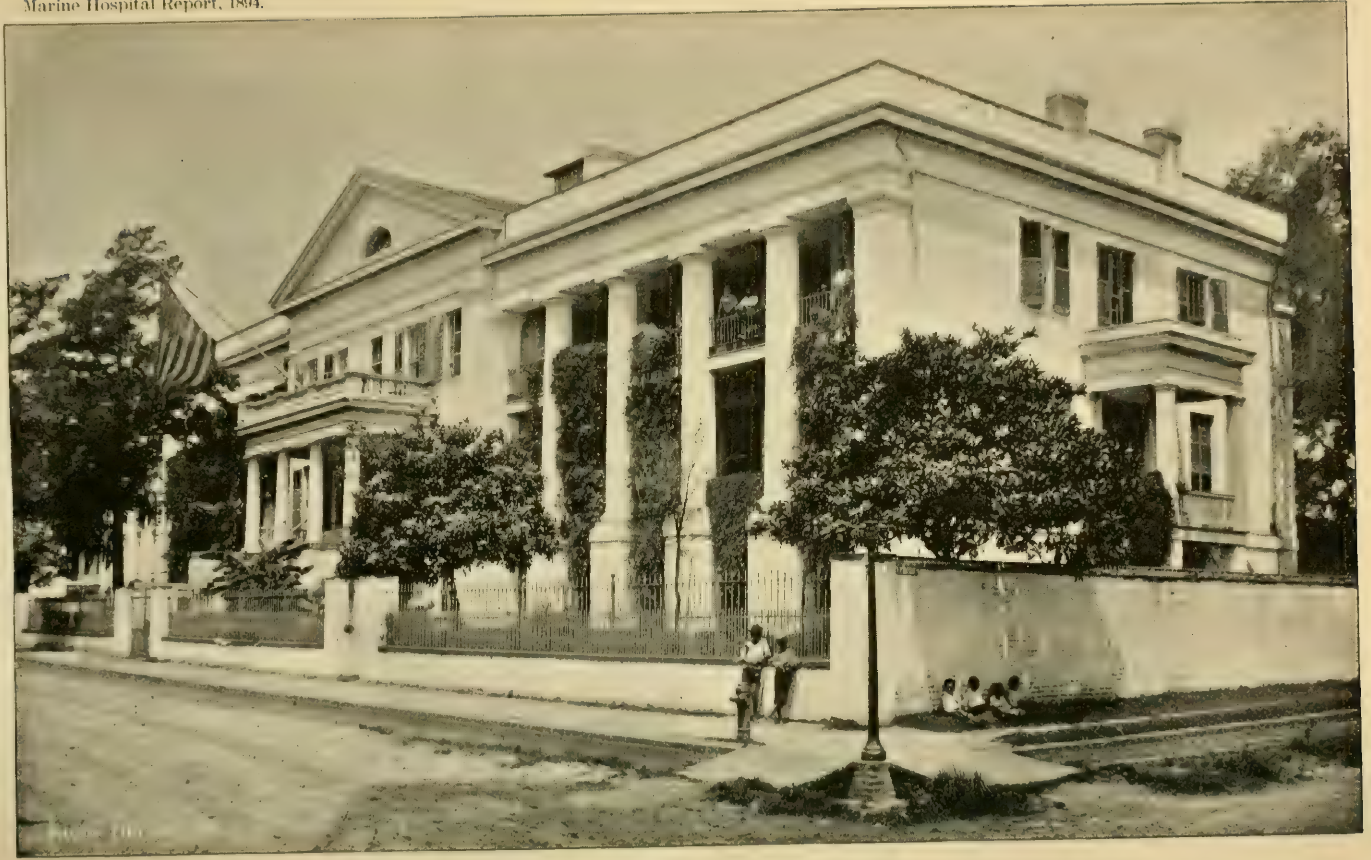
The following repairs are required during the present fiscal year: Painting the building outside and inside and preliminary repairs to woodwork, windows, walls, water pipes, grates, and mantels, $3,000; laying a pipe for carrying hot water from the kitchen to the executive building and putting a sink in the steward's quarters,



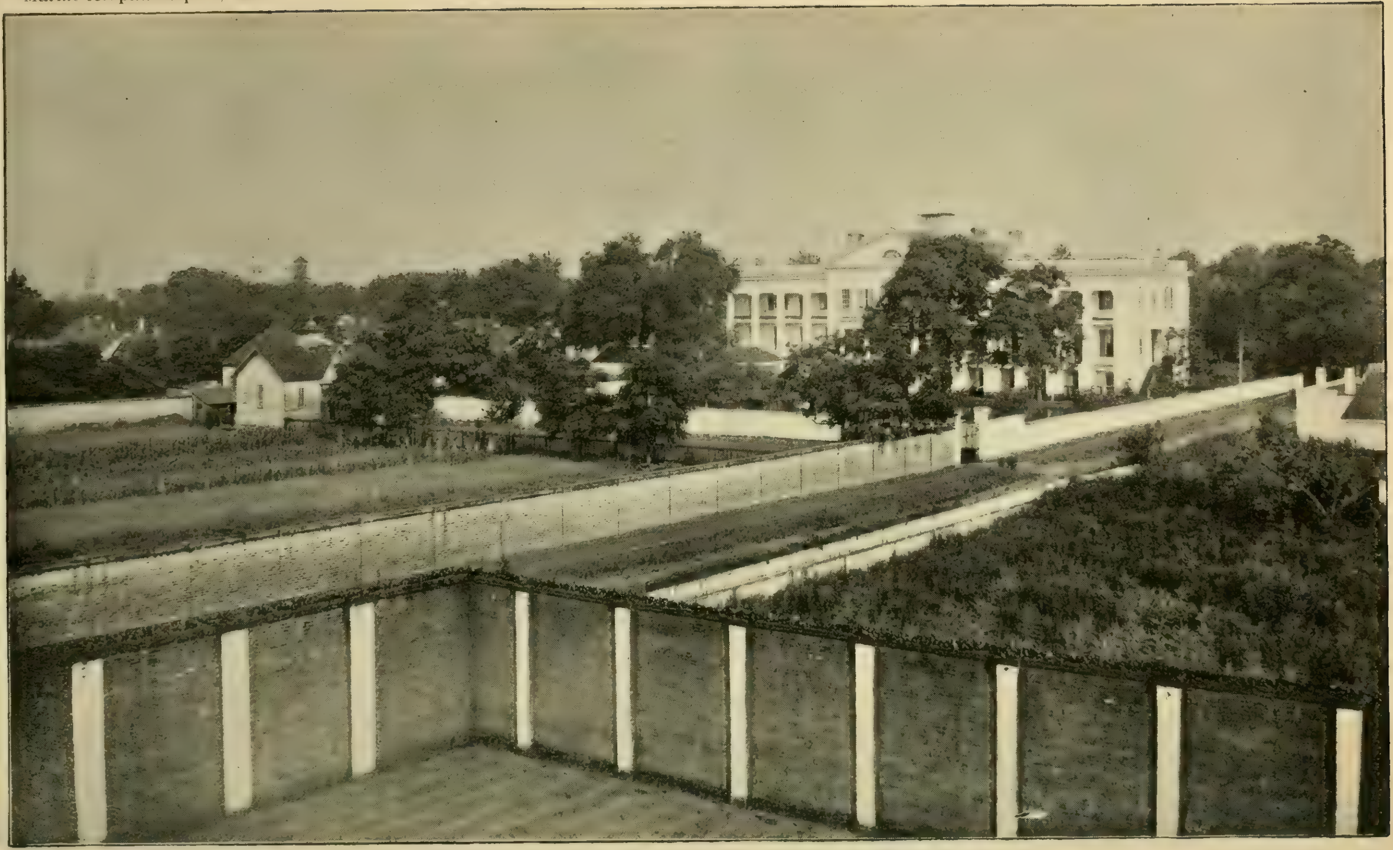
U. S. MARINE HOSPITAL, LOUISVILLE, KENTUCKY.



U. S. MARINE HOSPITAL, MEMPHIS, TENNESSEE.



U. S. MARINE HOSPITAL, MOBILE, ALABAMA.



U. S. MARINE HOSPITAL, MOBILE, ALABAMA. (VIEW FROM REAR.)

$75; overhauling and repairing water-closets, $150. Besides these repairs stone-wall abutments are necessary to retain the embankments, and a fence to surround the reservation.

Hospital at Mobile, Ala. (*erected 1843*).—Surg. C. S. D. Fessenden reports the following repairs and alterations made at this hospital during the fiscal year ending June 30, 1894:

New sink in surgeon's quarters, $24; repairing grates, etc., $103.50; down spout from roof, $7; paints, oils, and brushes, $64.90; repairs to plastering, $25; repairs to roof, $15; new floor in basement, $504; minor repairs, $24.90.

The following repairs will be necessary during the present fiscal year:

New floors in surgeon's quarters; new bath tub in surgeon's quarters; new sink in hospital kitchen; painting wards; two waste-pipe funnels and one urinal, and three new urinals in the wards. The total estimated cost of these repairs will not exceed $350.

Hospital at New Orleans, La. (*erected 1885*).—Surg. James M. Gassaway reports the following repairs and alterations made during the past year:

The old and unsafe main boiler, upon which the station depended for pumping water into the reservation and furnishing all the steam power, having entirely broken down, was replaced by a horizontal boiler, 10 feet by 44 inches, with thirty-six 3-inch tubes, set in brickwork and properly connected, at a total cost of $829. The inside of the three wards, with their offices, smoking rooms, bathroom, attendants' rooms, mortuary, and several rooms in the quarters, have been painted, and the outside of the wards, galleries, windows, blinds, kitchen, and stable have received one or more coats of paint. Several of the outbuildings and the underpinning of the wards have been whitewashed. This work has been done by the attendants, at an expense, for paints, brushes, and lime, of $410. The roofs and gutters of several of the buildings have been repaired, at a cost of $235. The urinals, water-closets, bath tubs, and wash basins of the wards and quarters have been repaired, at a cost for material of $41.

The water-supply system is now undergoing improvement, for which an appropriation of $3,000 was made by Congress August 12, 1892.

Repairs have been made to the woodwork of the buildings, board walks, fences, gates, exposed gas, water, and steam pipes, at a cost for material of $125. Minor repairs have been made to stoves, heaters, electric-light system, water and sewerage pumps, and to the hot-water supply, at a total cost of $100.

A large quantity of sand and débris was removed from the batture or river bank of the reservation, where it had been deposited by the annual rise of the Mississippi River (18,368 cart loads), for which the Department was paid $574.31.

The total expenditure for repairs and alterations for the year ending June 30, 1894, including the new water supply, not quite finished, was $5,126.

The following repairs and alterations are necessary during the fiscal year ending June 30, 1895:

A new laundry building, with modern steam appliances, to replace the antiquated and insufficient methods still in vogue, is urgently necessary. This building should contain quarters for the attendants, with storerooms for new and condemned goods. The building containing the mortuary, stable, and carriage house should be raised some 4 feet from the ground to preserve the woodwork from decay and to secure it from the stable drainage. The ambulance house is too small and should be extended 20 feet and a second doorway made.

The surgeon's quarters should have the roof of the kitchen building raised on a level with the two-story front building, two rooms placed thereon, and a back stairway added. The second-story gallery contemplated by the original plan should be added. The passed assistant surgeon's quarters should be raised 8 feet and the kitchen and laundry placed beneath. The second-story gallery contemplated by the original plan should also be added. The windows of the executive building and the surgeon's and passed assistant surgeon's quarters are too small, and should be made to extend from the ceiling to the floor. The power house, covering the boiler, steam pumps for supplying water and ridding the reservation of sewage, with the electric-light engine and dynamo, and also containing the carpenter, plumbing, and steam-fitting shop, is old, badly decayed, and will soon be untenable. It should be replaced by a substantial structure designed for the purpose. The usual annual amount of painting of all the buildings will be necessary to preserve them in this climate. Miscellaneous repairs will be necessary on walks, roads, and bridges, and on fences. It is recommended that a gateway for vehicles and foot passengers should be cut through the east and one through the west wall of the reservation and connected by an 18-foot driveway.

Hospital at Portland, Me. (erected 1859).—P. A. Surg. C. E. Banks reports the following repairs made to this hospital and grounds during the fiscal year ending June 30, 1894:

The power house for the electric light plant, for which a special appropriation of $6,000 has been made by Congress, was completed in January at a cost of $2,435, and is now ready for the installation. Competitive bids for this portion of the work were received June 15 ultimo, but owing to the limited amount available, the lowest bid being in excess of the sum, no determination of the matter has been made by the Department at this date.

Repairs to plastering in the hospital building and lazaretto, costing $114.26, have been made during the year. Renewal of the old windows in portions of the building, eighty in all, was authorized by the Department before the close of the fiscal year, to cost $414, and this work is now under way.

A painter was employed and material to the value of $45 was purchased to renew old paint on woodwork of corridors and rooms of the hospital. All the rooms, corridors, and halls of the building, once whitewashed, have been by gradual work painted in oil, adding greatly to the finish of the building interiorly.

Much work has been done this spring by the hospital attendants in terracing about the new power building, extending and repairing the roads and grading same, and beautifying the lawns with ornamental flower beds, without expense to the Government.

The following repairs, alterations, and improvements are recommended:

A steam laundry plant, as heretofore reported, should be furnished this hospital, at an estimated cost of $1,000. There is room in the new power building for one suitable for this station, and the power could be derived from the boilers and engines of the electric plant or from the high-pressure boiler already in the basement of the hospital. The hot-water system supplying the kitchen and laundry is defective in the principles of its construction, and is consequently out of order a great deal, requiring the attention of a plumber every few weeks, and should be rebuilt. It has been inspected and condemned by an official detailed by the Supervising Architect.

An elevator to replace the old hand-power kitchen dumb-waiter is needed to run to the third story, of sufficient capacity to lift a helpless patient, and should be supplied. The horse stalls in the stable are not only worn out, but faulty in dimensions, and should be rebuilt on the south side of the stable.

A new door is needed at the main hospital entrance, and owing to its unprotected position on the north side, where sick and disabled seamen are landed from the ambulance, there should be a permanent hood or awning of iron work to furnish protection from rain and snow. Repairs to the grounds, renewal of the lawns, and terracing

U. S. MARINE HOSPITAL, NEW ORLEANS, LOUISIANA.

U. S. MARINE HOSPITAL, PORT OF NEW YORK. (OCCUPIED UNDER LEASE.)

work are much needed. It will require a sum not less that $1,000 to properly do this work. The building is in a conspicuously commanding position, having beautiful natural advantages, which a private owner would at once make use of in keeping the place worthy of its situation and surroundings.

Hospital at Port Townsend, Wash.—By an act of Congress approved March 3, 1893, $30,000 was appropriated for the erection of a pavilion hospital at this port. Plans have been prepared and bids invited.

Hospital at San Francisco, Cal. (erected 1875).—Surg. John Godfrey reports the following repairs and alterations made at this hospital during the fiscal year ending June 30, 1894:

A 48-foot extension to the west wing of the new ward building has been constructed for $2,200, a concrete floor for same for $145, a boiler house and laundry building has been erected for $6,497, and a steam plant is being laid at a cost of $15,114. Repairs of a minor character were made by attendants, including the laying of a board walk from the hospital to Lake street. The material for same cost $113.

The hospital buildings, officers' quarters, the roofs, tanks, and flagstaff need painting. The old water-closets, bath tubs, and urinals in all the buildings need to be replaced with modern sanitary ones. New sinks for kitchen and wards are necessary. The old laundry building should be raised one story and converted into quarters for attendants. Minor repairs are necessary to floors, dispensary, roofs, and chimneys.

Hospital at St. Louis, Mo. (erected 1885).—P. A. Surg. D. A. Carmichael reports the following repairs and alterations made in building and grounds at this station:

Repairs to ranges in surgeon's quarters and hospital kitchen, $74.50; repairs to roof of old building, $472; repairs to roof of executive building and wards, $38; 119 door and window screens in executive building and wards, $354; new sinks in hospital kitchen and patients' dining room, $25.15; repairs to plumbing, $34; paints and oils, $49.75; new tubes in high-pressure boiler, $73; scraping and painting smokestack, $18; 6 new sash frames in old building, $44; new cedar posts for grape vines in garden, $40.80.

The interior of the executive building and the wainscoting of wards have been painted by the hospital employees. The hospital fence has also been repaired, and shelving has been put in dispensary, subsistence storeroom, and general storeroom.

The repairs and alterations now necessary are:

New brick stable and barn, $5,000; iron tank and hose, in case of fire, $2,000; new floors in executive building, wards, galleries, laundry, walk from wards to kitchen, and three new doors in old building, $800; plastering wards, surgeon's quarters, laundry, and executive building, $80; repairs to stonework and steps on old building, $60; repairs to fence, $30; paint for radiators and alteration of steam-heating apparatus, $800; alteration of smokestack and repairs to brickwork of boiler house, $400; 1,000-gallon tank for reception of filtered water for laundry purposes, $100.

Hospital at Wilmington, N. C. (erected 1859).—Surg. John Vansant reports the following repairs and alterations made at this hospital:

Lowering overflow pipe, closing old outlet, putting in telltale pipe and float valve for water tank, $38; repairing stable and laying a plank walk in front of grounds, $100; minor repairs to gas pipe, elevator, and flagstaff, $6.

During the current fiscal year ending June 30, 1895, it is estimated that the following repairs will be necessary:

Repainting roof, painting cornice and all ironwork of building, also the floors and galleries; repair and painting front fence, a cement walk from the front gate to steps of hospital, and a hydrant in grounds. Minor repairs are necessary to electric bells and to plumbing.

Hospital at Vineyard Haven, Mass. (established 1880).—P. A. Surg. E. R. Houghton reports the following repairs and alterations on the hospital and grounds during the fiscal year ending June 30, 1894:

Repairing the drains at a cost of $9.37 was the only work done at this station, except such as was made by the attendants upon the grounds.

The following is an estimate of the cost of repairs that are considered necessary: Repairing road of reservation, $100; repair to steps, $15; shell-lacking ward floor, $15; repairing windows, doors, etc., $10; painting exterior of building, $200.

The new hospital building authorized by Congress is in course of construction and is expected to be completed by the end of the fiscal year 1895.

CARE OF SEAMEN.

The provisions made for the care of seamen for the fiscal year ending June 30, 1895, at all ports where relief is furnished, are set forth in the following circular:

CONTRACTS FOR THE CARE OF SEAMEN, ETC.

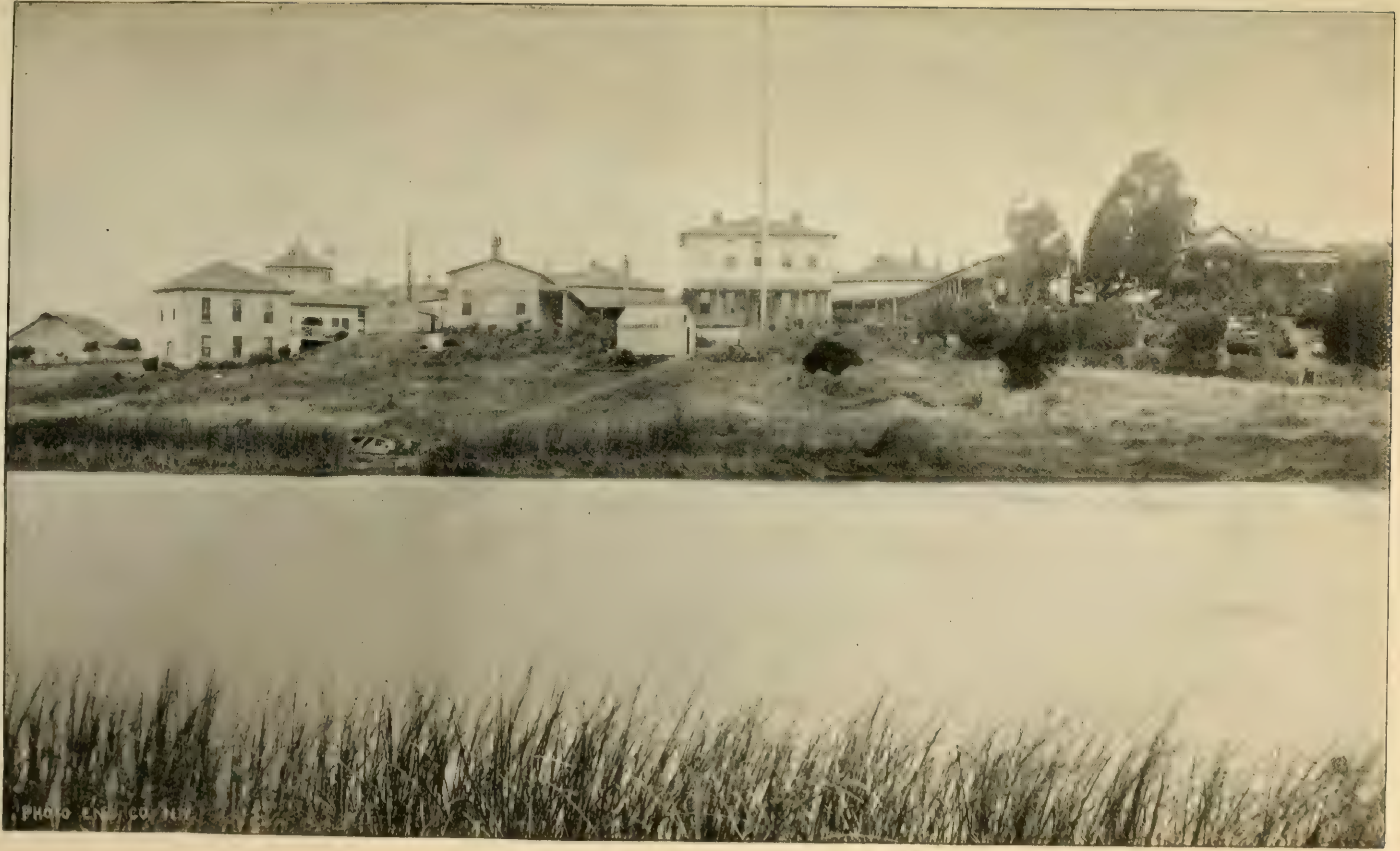
TREASURY DEPARTMENT,
OFFICE OF SUPERVISING SURGEON-GENERAL, U. S. M. H. S.,
Washington, D. C., June 20, 1894.

The following contracts for the care of seamen entitled to relief from this Service for the fiscal year ending June 30, 1895, are published for the information of accounting officers of the Treasury Department, disbursing agents, medical officers of the Marine-Hospital Service, acting assistant surgeons, and customs officers. This circular is to be regarded as official notification of the acceptance of the proposals made by the parties designated, and must be cited, giving its number and date, on all bills for the treatment and maintenance of seamen, and for the burial of deceased patients, as the authority for any expenditure incurred under its provisions. Charges will be allowed for the day of admission of a hospital patient, but not for the day of discharge or death. The right is reserved by the Secretary of the Treasury to terminate any contract whenever the interests of the Service require it. All relief must be furnished in accordance with the revised regulations of the Marine-Hospital Service; and, in consequence of the largely increased expenditures for relief, and of the limited sources of income, it has become necessary to give notice that, as provided in the regulations, no allowance will be made for expenditures incurred at any other station than those named in this circular.

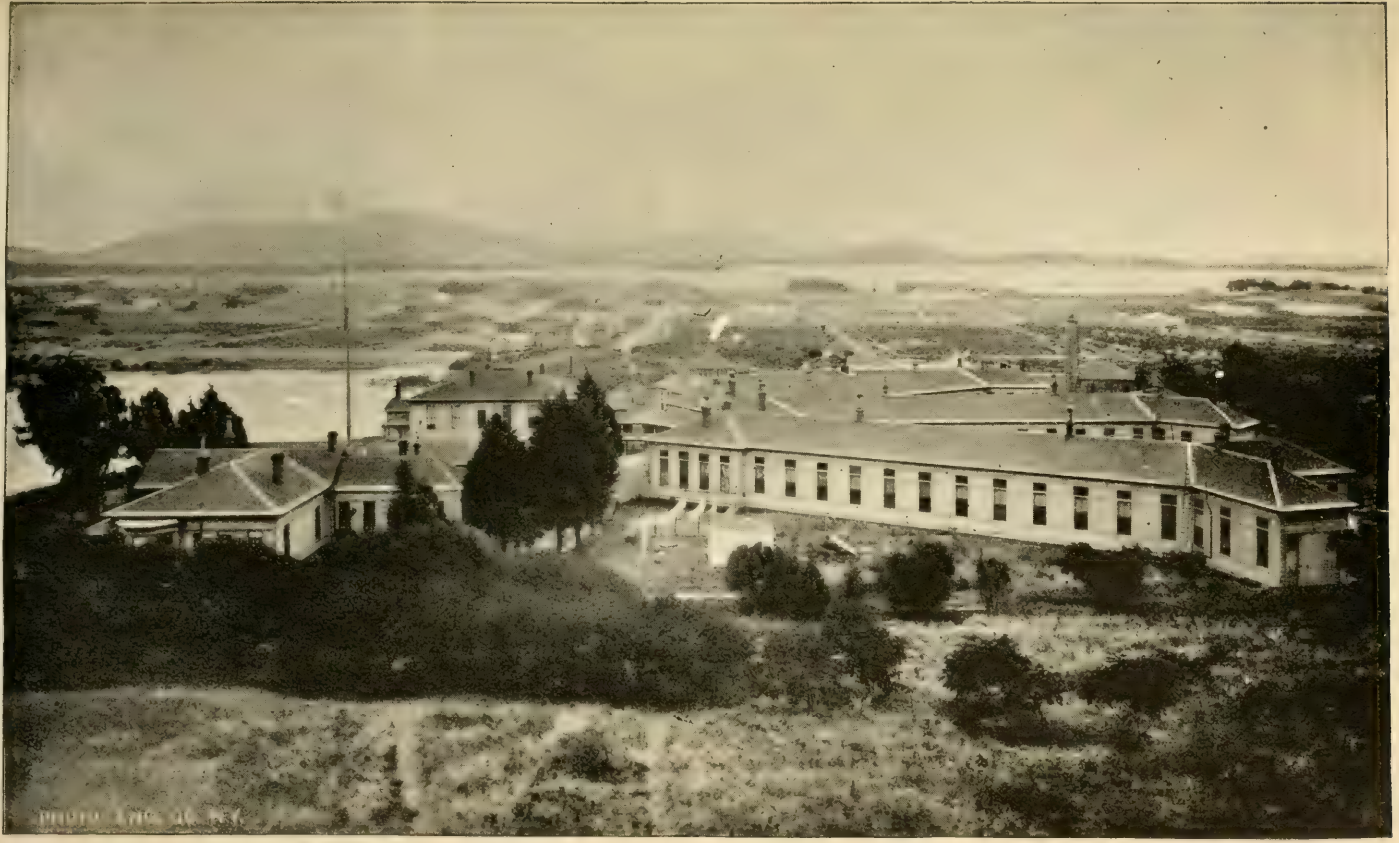
The term "contagious diseases" wherever occurring in this circular, except as to specific contracts made otherwise, includes only those diseases which, under usual municipal regulations, are required to be treated in a pesthouse, namely, cholera, yellow fever, plague, or smallpox, and in some municipalities, measles.

WALTER WYMAN,
Supervising Surgeon-General U. S. Marine-Hospital Service.

Approved:
J. G. CARLISLE,
Secretary of the Treasury.



U. S. MARINE HOSPITAL, SAN FRANCISCO, CALIFORNIA.



U. S. MARINE HOSPITAL, SAN FRANCISCO, CALIFORNIA. (GENERAL VIEW.)

Albany, N. Y.—The medical attendance to be furnished by an acting assistant surgeon; the Albany Hospital to furnish quarters, subsistence, nursing, and medicines, at $1 per day.

Alexandria, Va.—The medical attendance to be furnished by an acting assistant surgeon; the Alexandria Infirmary to furnish quarters, subsistence, nursing, and medicines, at 90 cents per day.

Apalachicola, Fla.—Dr. J. D. Rush to furnish medical attendance and medicines, at $30 per month; Martha Campbell to furnish quarters, subsistence, and nursing, at $1 per day, and to provide for the burial of deceased patients, at $12.50 each.

Ashland, Wis.—St. Joseph's Hospital to furnish quarters, subsistence, nursing, medical attendance, and medicines, at $1 per day.

Ashtabula, Ohio.—The medical attendance to be furnished by an acting assistant surgeon; Mrs. Henry Whelpley to furnish quarters, subsistence, and nursing at $1 per day; contagious diseases, $1.50 per day; John Ducro & Sons to provide for the burial of deceased patients, at $14 each. Patients requiring long-continued hospital treatment will be furnished transportation to the United States Marine Hospital at Detroit, Mich.

Astoria, Oreg.—The medical attendance to be furnished by an acting assistant surgeon; St. Mary's Hospital to furnish quarters, subsistence, nursing, and medicines, at $1 per day.

Baltimore, Md.—Hospital patients to be cared for in the United States Marine Hospital; F. M. Denny to provide for the burial of deceased patients, at $16.50 each.

Bangor, Me.—The medical attendance to be furnished by an acting assistant surgeon; John Foley to furnish quarters, subsistence, and nursing, at $1 per day.

Bath, Me.—The medical attendance to be furnished by an acting assistant surgeon; Alpheus Dodge to furnish quarters, subsistence, and nursing, at 95 cents per day. Patients requiring long-continued hospital treatment will be furnished transportation to the United States Marine Hospital at Portland, Me.

Belfast, Me.—The medical attendance to be furnished by an acting assistant surgeon.

Bismarck, N. Dak.—The medical attendance to be furnished by an acting assistant surgeon; Lamborn Hospital to furnish quarters, subsistence, nursing, and medicines, at 90 cents per day.

Boston, Mass.—Hospital patients to be cared for in the United States Marine Hospital at Chelsea, Mass.; burial of deceased patients at the hospital cemetery; burial of foreign patients, at $10 each.

Bridgeport, Conn.—Bridgeport Hospital to furnish quarters, subsistence, nursing, medical attendance, and medicines, at $1 per day; Hawley, Wilmot & Reynolds to provide for the burial of deceased patients, at $16 each.

Brownsville, Tex.—The medical attendance to be furnished by an acting assistant surgeon. Until other arrangements are made, $1 per day will be allowed for the care of hospital patients.

Brunswick, Ga.—The medical attendance to be furnished by an acting assistant surgeon; T. Blount Bowen to furnish quarters, subsistence, and nursing, at 75 cents per day.

Buffalo, N. Y.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; the Buffalo Hospital (Sisters of Charity) to furnish quarters, subsistence, nursing, and medicines, at 80 cents per day; contagious diseases at $2 per day; and to provide for burial of deceased patients at $10 each.

Burlington, Iowa.—The Mercy Hospital to furnish quarters, subsistence, medical attendance, nursing, and medicines, at 85 cents per day.

Burlington, Vt.—The Mary Fletcher Hospital to furnish quarters, subsistence, nursing, medical attendance, and medicines, at $1 per day.

Cairo, Ill.—Hospital patients to be cared for in the United States Marine Hospital; L. E. Falconer to provide for the burial of deceased patients, at $9 each.

Cambridge, Md.—The medical attendance to be furnished by an acting assistant surgeon; Charles J. Webb to furnish quarters, subsistence, and nursing, at 50 cents per day.

Charleston, S. C.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; out-patients to be treated at the dispensary (Atlantic Wharf); St. Francis Xavier's Infirmary to furnish quarters, subsistence, nursing, and medicines, at 79 cents per day; contagious diseases, $2 per day; and to provide for the burial of deceased patients, at $10 each.

Chattanooga, Tenn.—The medical attendance to be furnished by an acting assistant surgeon; Hamilton County Hospital to furnish quarters, subsistence, nursing, and medicines, at 65 cents per day.

Chicago, Ill.—Hospital patients to be cared for in the United States Marine Hospital; H. Bartlett to provide for the burial of deceased patients, at $17.50 each.

Cincinnati, Ohio.—Hospital patients to be cared for in the United States Marine Hospital; dispensary at the hospital, southeast corner of Third and Kilgour streets; John B. Habig to provide for the burial of deceased white patients, at $16 each; colored patients, at $17.50 each.

Cleveland, Ohio.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; the Cleveland City Hospital Association to furnish quarters, subsistence, nursing, and medicines, in the United States Marine Hospital, under lease of September 21, 1875, at 64 cents per day. The hospital to be kept in repair by the association. Flynn, Abel & Froelk to furnish ambulance service, at $2 for each patient, and to provide for the burial of deceased patients, at $17 each.

Corpus Christi, Tex.—The medical attendance to be furnished by an acting assistant surgeon; James E. Ellis to furnish quarters, subsistence, and nursing, at $1 per day.

Darien, Ga.—The medical attendance to be furnished by an acting assistant surgeon; patients requiring hospital treatment will be furnished transportation to Brunswick, Ga.

Detroit, Mich.—Hospital patients to be cared for in the United States Marine Hospital; out-patients to be treated at the dispensary, No. 90 Griswold street; Frank Gibbs & Co. to provide for the burial of deceased patients, at $7.90 each.

Dubuque, Iowa.—The medical attendance to be furnished by an acting assistant surgeon; St. Joseph's Mercy Hospital to furnish ambulance service, quarters, subsistence, nursing, and medicines, at $1 per day; M. M. Hoffman to provide for the burial of deceased patients, at $14 each.

Duluth, Minn.—The medical attendance to be furnished by an acting assistant surgeon; St. Luke's Hospital to furnish quarters, subsistence, nursing, and medicines, at 85 cents per day; John W. Stewart to provide for the burial of deceased patients, at $15 each.

Edenton, N. C.—R. Dillard, M. D., to furnish quarters, subsistence, nursing, medical attendance, and medicines, at $2 per day. For out-patients $1 will be allowed for each medical examination and 25 cents additional for each time medicine is furnished.

Elizabeth City, N. C.—The medical attendance to be furnished by an acting assistant surgeon.

Ellsworth, Me.—The medical attendance to be furnished by an acting assistant surgeon. Hospital care and treatment will be furnished only to patients who are unable to bear transportation to the United States Marine Hospital at Portland, Me.

Erie, Pa.—The medical attendance to be furnished by an acting assistant surgeon; Hamot Hospital Association to furnish quarters, subsistence, nursing, and medicines, at 85 cents per day. Care and treatment of cases of contagious diseases to be furnished by the health department of the city of Erie, at $2.85 per day; W. J. Quinn to provide for the burial of deceased patients, at $18 each.

Escanaba, Mich.—The medical attendance to be furnished by an acting assistant surgeon; Delta County Hospital to furnish quarters, subsistence, and nursing, at $1 per day.

Eureka, Cal.—The medical attendance to be furnished by an acting assistant surgeon; Maria Anderson to furnish quarters, subsistence, nursing, and medicines, at 95 cents per day.

Evansville, Ind.—Hospital patients to be cared for in the United States Marine Hospital; R. Smith to provide for the burial of deceased patients, at $22 each.

Fernandina, Fla.—The medical attendance to be furnished by an acting assistant surgeon; John H. Mills to furnish quarters, subsistence, and nursing, at $1 per day; contagious diseases, at $2 per day, and to provide for the burial of deceased patients, at $15 each.

Fredericksburg, Va.—The medical attendance to be furnished by an acting assistant surgeon; Amelia Parrott to furnish quarters, subsistence, nursing, and medicines, at 90 cents per day; George Nosset to provide for the burial of deceased patients, at $12.50 each.

Gallipolis, Ohio.—The medical attendance to be furnished by an acting assistant surgeon; Harriet J. Kinder to furnish quarters, subsistence, and nursing, at 75 cents per day, and to provide office quarters for the acting assistant surgeon, at $10 per month; Hayward & Son to provide for the burial of deceased patients, at $15 each.

Galveston, Tex.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; St. Mary's Infirmary to furnish ambulance service, quarters, subsistence, nursing, and medicines, at $1 per day; contagious diseases, at $2 per day, and to provide for the burial of deceased patients, at $10 each. Patients requiring long-continued hospital treatment will be furnished transportation to the United States Marine Hospital at New Orleans.

Georgetown, D. C.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; out-patients to be treated at the dispensary, No. 3 B street SE., Washington; Providence Hospital, Washington, to furnish quarters, subsistence, nursing, interne attendance, and medicines, at 75 cents per day.

Georgetown, S. C.—The medical attendance to be furnished by an acting assistant surgeon; John J. Lang and Susan Dennison to furnish quarters, subsistence, and nursing, at $1 per day; Joseph J. Dunmore to provide for the burial of deceased patients, at $18 each.

Gloucester, Mass.—The medical attendance to be furnished by an acting assistant surgeon. Patients requiring hospital care and treatment to be furnished transportation to the United States Marine Hospital at Chelsea, Mass.

Government Hospital for the Insane, District of Columbia.—Under act of Congress, March 3, 1875, to furnish quarters, subsistence, nursing, medical attendance, and medicines, at $4.50 per week, for each insane patient admitted upon the order of the Secretary of the Treasury.

Grand Haven, Mich.—The medical attendance to be furnished by an acting assistant surgeon; Nancy Palmer to furnish quarters, subsistence, and nursing, at $1 per day.

Green Bay, Wis.—The medical attendance to be furnished by an acting assistant surgeon; St. Vincent Hospital to furnish quarters, subsistence, nursing, and medicines, at $1 per day; contagious diseases, at $3 per day.

Hartford, Conn.—The Hartford Hospital to furnish quarters, subsistence, nursing, medical attendance, and medicines, at $1 per day; G. W. Woolley & Son to provide for the burial of deceased patients, at $13 each.

Jacksonville, Fla.—The medical attendance to be furnished by an acting assistant surgeon; William H. Jones to furnish quarters, subsistence, and nursing, at 95 cents per day; Edward J. Gordon to provide for the burial of deceased patients, at $12.50 each.

Key West, Fla.—Hospital patients to be cared for in the United States Marine Hospital; Bolio & Boza to provide for the burial of deceased patients, at $8.50 each.

La Crosse, Wis.—The medical attendance to be furnished by an acting assistant surgeon; St. Francis Hospital to furnish quarters, subsistence, nursing, and medicines, at $1 per day; Theo. Mannstedt to provide for the burial of deceased patients, at $20 each.

Lewes, Del.—The medical attendance to be furnished by an acting assistant surgeon; Levin D. Lynch to furnish quarters, subsistence, nursing, and medicines, at $1 per day; Walter J. Poynter to provide for the burial of deceased patients, at $14.50 each.

Little Rock, Ark.—The medical attendance to be furnished by an acting assistant surgeon; Little Rock Infirmary to furnish quarters, subsistence, nursing, and medicines, at $1 per day; F. Baer to provide for the burial of deceased patients, at $12 each.

Louisville, Ky.—Hospital patients to be cared for in the United States Marine Hospital; out-patients to be treated at the dispensary, 915 Jefferson street; Schoppenhorst Bros. to provide for the burial of deceased patients, at $15 each.

Ludington, Mich.—The medical attendance to be furnished by an acting assistant surgeon; Hannibal D. Linsley to furnish quarters, subsistence, and nursing, at $1 per day.

Machias, Me.—The medical attendance to be furnished by an acting assistant surgeon; Abiel E. Preble to furnish quarters, subsistence, and nursing, at 86 cents per day; L. H. Hanscom to provide for the burial of deceased patients, at $15 each.

Manistee, Mich.—The medical attendance to be furnished by an acting assistant surgeon; Mercy Hospital to furnish quarters, subsistence, nursing, and medicines, at 90 cents per day.

Marquette, Mich.—The medical attendance to be furnished by an acting assistant surgeon; St. Mary's Hospital to furnish quarters, subsistence, and nursing, at $1 per day, and to provide for the burial of deceased patients, at $15 each.

Marshfield, Oreg.—The medical attendance to be furnished by an acting assistant surgeon; John Snyder to furnish quarters, subsistence, nursing, and medicines, at $1.20 per day.

Memphis, Tenn.—Hospital patients to be cared for in the United States Marine Hospital; John Walsh to provide for the burial of deceased patients, at $10 each.

Michigan City, Ind.—The medical attendance to be furnished by an acting assistant surgeon; seamen requiring hospital treatment must make application at the United States Marine Hospital at Chicago, Ill.

Milwaukee, Wis.—The medical attendance to be furnished by an acting assistant surgeon; St. Mary's Hospital to furnish quarters, subsistence, nursing, and medicines, at 80 cents per day; George L. Thomas to provide for the burial of deceased patients, at $15 each. Chronic hospital patients to be furnished transportation to the United States Marine Hospital at Chicago, Ill.

Mobile, Ala.—Hospital patients to be cared for in the United States Marine Hospital; McKay & Roche to provide for the burial of deceased patients, at $12.50 each.

Nashville, Tenn.—The medical attendance to be furnished by an acting assistant surgeon; Nashville City Hospital to furnish quarters, subsistence, nursing, and medicines, at 90 cents per day.

New Bedford, Mass.—The medical attendance to be furnished by an acting assistant surgeon; patients requiring hospital care and treatment, if able to bear transportation, will be sent to the United States Marine Hospital at Vineyard Haven.

Newbern, N. C.—The medical attendance to be furnished by an acting assistant surgeon; Susan A. Collins to furnish quarters, subsistence, and nursing, at 70 cents per day; J. A. Simpson to provide for the burial of deceased patients, at $15 each.

New Haven, Conn.—The medical attendance to be furnished by an acting assistant surgeon; the New Haven General Hospital to furnish quarters, subsistence, nursing, and medicines, at $1 per day, and to provide for the burial of deceased patients, at $15 each; the New Haven board of health to furnish all necessary care and treatment in cases of any contagious disease, at $3 per day.

New London, Conn.—The medical attendance to be furnished by an acting assistant surgeon; Mrs. J. G. Lynch to furnish quarters, subsistence, nursing, and medicines, at 75 cents per day; Caulkins & Prentis to provide for the burial of deceased patients, at $16 each.

New Orleans, La.—Hospital patients to be cared for in the United States Marine Hospital; T. J. McMahen & Sons Co. to provide for the burial of deceased patients, at $9 each.

Newport, Ark.—The medical attendance to be furnished by an acting assistant surgeon; Puss Watkins to furnish quarters, subsistence, and nursing, at $1 per day.

Newport, R. I.—The medical attendance to be furnished by an acting assistant surgeon; the Newport Hospital to furnish quarters, subsistence, nursing, and medicines, at $1 per day. Patients requiring long-continued hospital treatment will be furnished transportation to the Marine Hospital, Stapleton, Staten Island, New York.

New York, N. Y.—Hospital patients to be cared for in the Marine Hospital, Stapleton, Staten Island, New York; out-patients to be treated at the dispensary, near the New Barge Office, Battery; G. F. Schaefer, of Staten Island, to provide for the burial of deceased patients, at $9 each.

Norfolk, Va.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; St. Vincent Hospital to furnish quarters, subsistence, nursing, ambulance service, and medicines, at 83 cents per day; J. E. Edwards to provide for the burial of deceased patients, at $10 each.

Ogdensburg, N. Y.—The medical attendance to be furnished by an acting assistant surgeon; the City Hospital to furnish quarters, subsistence, medicines, and nursing, at $1.25 per day; L. McGillis to provide for the burial of deceased patients, at $15 each.

Oswego, N. Y.—The medical attendance to be furnished by an acting assistant surgeon; the Oswego Hospital to furnish quarters, subsistence, nursing, and medicines, at $1 per day.

Pensacola, Fla.—The medical attendance to be furnished by an acting assistant surgeon; R. W. Hargis to furnish quarters, subsistence, nursing, and medicines, at $1 per day; S. B. Hutchinson & Co. to provide for the burial of deceased patients, at $15 each. Patients requiring long-continued hospital treatment will be furnished transportation to the United States Marine Hospital at Mobile, Ala.

Philadelphia, Pa.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; the German Hospital to furnish ambulance service, quarters, subsistence, nursing, medicines, and one interne, at $1 per day; and to provide for the burial of deceased patients, at $15 each.

Pittsburg, Pa.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; out-patients to be treated at No. 96 Wood street; the Mercy Hospital to furnish quarters, subsistence, nursing, medicines, and a resident physician, at 94 cents per day; J. J. Giltinan to provide for the burial of deceased patients, at $13 each. Care and treatment of contagious cases to be furnished by the Pittsburg Department of Public Safety, at $2 per day.

Port Huron, Mich.—The medical attendance to be furnished by an acting assistant surgeon; "Hospital and Home" to furnish quarters, subsistence, and nursing, at $1 per day. Patients requiring long-continued hospital treatment will be furnished transportation to the United States Marine Hospital at Detroit; J. W. Kelly to provide for the burial of deceased patients, at $8 each.

Portland, Me.—Hospital patients to be cared for in the United States Marine Hospital; Ilsley Bros. to provide for the burial of deceased patients, at $8.50 each.

Portland, Oreg.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; out-patients to be treated at the dispensary, room 21, Union Block, corner of First and Stark streets; St. Vincent's Hospital to furnish quarters, subsistence, nursing, and medicines, at 60 cents per day; contagious diseases, at $2 per day; F. S. Dunning to provide for the burial of deceased patients, at $10 each.

Portsmouth, N. H.—The medical attendance to be furnished by an acting assistant surgeon; Cottage Hospital to furnish quarters, subsistence, and nursing, at $1 per day.

Port Tampa, Fla.—The medical attendance to be furnished by an acting assistant surgeon.

Port Townsend, Wash.—Hospital patients to be cared for in the United States Marine Hospital; George E. Starrett to provide for the burial of deceased patients, at $16 each.

Providence, R. I.—The Rhode Island Hospital to furnish quarters, subsistence, nursing, medical attendance, and medicines, at $1 per day, and to provide for the burial of deceased patients, at $12 each. Patients requiring long-continued hospital treatment will be furnished transportation to the United States Marine Hospital at Chelsea (port of Boston).

Richmond, Va.—The medical attendance to be furnished by an acting assistant surgeon; out-patients to be treated at the Marine-Hospital Office, custom-house building; "Retreat for the Sick" Hospital to furnish quarters, subsistence, nursing, and medicines, at $1 per day.

Rockland, Me.—The medical attendance to be furnished by an acting assistant surgeon; John S. Ranlett to furnish quarters, subsistence, and nursing, at $1 per day; E. A. Burpee to provide for the burial of deceased patients, at $14 each. Patients requiring long-continued hospital treatment to be furnished transportation to the United States Marine Hospital at Portland, Me.

Rome, Ga.—The medical attendance to be furnished by an acting assistant surgeon; the Martha Battey Hospital to furnish quarters, subsistence, and nursing, at $1 per day.

Saginaw, Mich.—The medical attendance to be furnished by an acting assistant surgeon; Saginaw Hospital to furnish quarters, subsistence, nursing, and medicines, at 65 cents per day. Patients requiring long-continued hospital treatment to be furnished transportation to the United States Marine Hospital at Detroit, Mich.

St. Louis, Mo.—Hospital patients to be cared for in the United States Marine Hospital; John Hahn to provide for the burial of deceased patients, at $12.50 each.

St. Paul, Minn.—The medical attendance to be furnished by an acting assistant surgeon; St. Luke's Hospital to furnish quarters, subsistence, nursing, and medicines, at $1 per day, and to provide for the burial of deceased patients, at $8 each.

San Diego, Cal.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; St. Joseph's Hospital to furnish quarters, subsistence, nursing, and ambulance service, at 69 cents per day, and to provide for the burial of deceased patients, at $11 each.

Sandusky, Ohio.—The medical attendance to be furnished by an acting assistant surgeon; the Good Samaritan Hospital to furnish quarters, subsistence, and nursing, at $1 per day.

San Francisco, Cal.—Hospital patients to be cared for in the United States Marine Hospital; out-patients to be treated at the Marine Hospital Office, rooms 1 to 3, Appraiser's building; burial of deceased patients at the hospital cemetery; burial of foreign seamen, at $10 each.

San Pedro, Cal.—Randolph W. Hill, M. D., to furnish quarters, subsistence, nursing, medical attendance, and medicines, at 90 cents per day; contagious diseases, at $1.50 per day, and to provide for the burial of deceased patients, at $7 each.

Sault Ste. Marie, Mich.—The medical attendance to be furnished by an acting assistant surgeon; Mrs. Mary J. Walker to furnish quarters, subsistence, and nursing, at 75 cents per day; J. Vanderhook to provide for the burial of deceased patients, at $5 each.

Savannah, Ga.—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; St. Joseph's Infirmary to furnish quarters, subsistence, nursing, and medicines, at $1 per day; Joseph Goette to provide for the burial of deceased patients, at $7 each.

Seattle, Wash.—The medical attendance to be furnished by an acting assistant surgeon; Providence Hospital to furnish quarters, subsistence, nursing, and medicines, at 75 cents per day; the Cross Undertaking Company to provide for the burial of deceased patients, at $12.40 each.

Shreveport, La.—The medical attendance to be furnished by an acting assistant surgeon; out-patients to be treated at the Marine Hospital Office; Shreveport Charity Hospital to furnish quarters, subsistence, nursing, and medicines, at $1 per day; W. W. Waring to provide for the burial of deceased patients, at $14 each.

Solomons, Md.—The medical attendance to be furnished by an acting assistant surgeon; W. H. Files to furnish subsistence, nursing, fuel, and lights, at $1 per day; T. M. White to provide for the burial of deceased patients, at $7.50 each; patients requiring long-continued hospital treatment to be furnished transportation to the United States Marine Hospital at Baltimore, Md.

Superior, Wis.—The medical attendance to be furnished by an acting assistant surgeon; St. Francis Hospital to furnish quarters, subsistence, nursing, and medicines, at 90 cents per day.

Tacoma, Wash.—The medical attendance to be furnished by an acting assistant surgeon; Fanny C. Paddock Hospital to furnish quarters, subsistence, nursing, and medicines, at 55 cents per day.

Tappahannock, Va.—W. G. Jeffries, M. D., to furnish quarters, subsistence, nursing, medical attendance, and medicines, at Tappahannock; Dr. W. J. Newbill, at Carters Creek, and Dr. W. S. Christian, at Urbana, each at $1.50 per day. Patients requiring long-continued hospital treatment will be transferred to the United States Marine Hospital at Baltimore, Md.

Toledo, Ohio.—The medical attendance to be furnished by an acting assistant surgeon; St. Vincent Hospital to furnish quarters, subsistence, nursing, and medicines, at 80 cents per day; contagious diseases, $2 per day; and to provide for the burial of deceased patients, at $15 each.

Tuckerton, N. J.—The medical attendance to be furnished by an acting assistant surgeon.

Vicksburg, Miss.—The medical attendance to be furnished by an acting assistant surgeon; the Vicksburg City Hospital to furnish quarters, subsistence, nursing, and medicines, at $1 per day; contagious diseases, at $3 per day.

Vineyard Haven, Mass.—Hospital patients to be cared for in the United States Marine Hospital; M. C. Vincent to provide for the burial of deceased patients, at $17 each.

Wheeling, W. Va.—The medical attendance to be furnished by an acting assistant surgeon; the Wheeling Hospital to furnish quarters, subsistence, nursing, and medicines, at 75 cents per day.

Wilmington, N. C.—Hospital patients to be cared for in the United States Marine Hospital; Walter E. Yopp to provide for the burial of deceased patients, at $11.50 each.

At the following-named ports hospital or other relief will be furnished only under the provisions of the regulations for the Marine Hospital Service as to third-class stations:

Barnstable, Mass.; Beaufort, N. C.; Beaufort, S. C.; Castine, Me.; Cedar Keys, Fla.; Chatham, Mass.; Dennis, Mass.; Eastport, Me.; Edgartown, Mass.; Hyannis, Mass.; Newport News, Va.; Perth Amboy, N. J.; Provincetown, Mass.; Sag Harbor, N. Y.; Salem, Mass.; Sitka, Alaska; Somers Point, N. J.; Waldoboro, Me.; Wilmington, Del.; Wiscasset, Me.

The rate at ports not specifically provided for by this circular will, in each special case, be fixed by the Department, upon the recommendation of the proper officer, in accordance with the regulations.

The rate of charge for seamen from vessels of the Navy and Coast Survey, admitted to hospital under the provisions of the regulations, and of foreign seamen admitted under the act of March 3, 1875, is hereby fixed at the uniform rate of $1 per diem.

At all other ports not otherwise specified the dispensary is located at the custom-house or marine hospital.

PURVEYING DIVISION.

The report of the medical officer in charge of the purveying division shows that 347 requisitions for medical and other supplies have been filled to meet the wants of 19 United States marine hospitals and 42 other relief stations of the Service.

Eleven national quarantine stations, 3 United States revenue cutters, and the immigration hospital at Ellis Island, New York Harbor, have received their medical supplies through this division.

The following is a summary of the cost of the various supplies purchased for issue during the year:

Medical supplies	$15, 135. 32
Hospital stores	7, 113. 08
Hospital sundries	7, 775. 69
Surgical instruments and appliances	4, 492. 47
Bedding and clothing	6, 079. 03
Medical books and journals	866. 42

FINANCIAL STATEMENT.

FINANCIAL STATEMENT.

RECEIPTS AND EXPENDITURES, UNITED STATES MARINE-HOSPITAL SERVICE, FOR THE FISCAL YEAR ENDED JUNE 30, 1894.

The balance available at the commencement of the fiscal year was $107,162.18, and the receipts from all sources were $550,909.98.

The expenditures were $586,741.75, leaving on hand at the close of the fiscal year a balance of $71,330.41.

SUMMARY.

Balance July 1, 1893	$107,162.18
Receipts tonnage tax collected	537,798.19
Repayment for care and treatment of foreign seamen, etc	13,111.79
Total available during fiscal year	658,072.16
Expenditures	586,741.75
Balance June 30, 1894	71,330.41

STATEMENT BY APPROPRIATIONS.

Quarantine service, 1894.

Amount appropriated:	
Act of March 3, 1893	$50,000.00
Act of August 18, 1893	40,000.00
Repayment, care of foreign seamen, etc	271.13
Total available during fiscal year	90,271.13
Expenditures	90,271.13

No unexpended balance.

In addition to the above $17,969.13 has been expended at the several quarantine stations from the appropriation for preventing the spread of epidemic diseases, out of an allotment of $20,000, under date of April 4, 1894, for this purpose; also outstanding bills of $1,117.70 in course of adjustment.

Summary of expenditures on account of the quarantine service, fiscal year ended June 30, 1894.

Station.	Payment from the appropriation "Quarantine service, 1894.	Payment from the appropriation "Preventing the spread of epidemic diseases.	Total.
Cape Charles	$16.407.85	$3,605.00	$20.012.85
Delaware Breakwater	19.026.88	1,434.97	20,461.85
Gulf	13,728.52	2.778.29	16 506.81
Key West	8 131.22	6.931.40	15,062.62
Port Townsend	3,802.60	146.82	3,949.42
San Diego	4,672.07	666.55	5,338.62
San Francisco	14,406.85	586.21	14.993.06
South Atlantic	9,859.39	1,819.89	11,679.28
Miscellaneous	235.75		235.75
Total	90,271.13	17,969.13	108,240.26
Outstanding bills in course of adjustment			1,117.70
Grand total			109.357.96

Preventing the spread of epidemic diseases.

Balance, July 1, 1893		$925, 965. 45
Repayment, care of foreign seamen		20. 00
Total available during fiscal year		925, 985. 45
Expenditures:		
Foreign medical service, salaries, traveling expenses, etc.	$47, 725. 13	
Sanitary inspectors in United States, salaries, traveling expenses, etc	46, 429. 03	
Reedy Island, Delaware, pier, disinfecting apparatus, hospital building, etc	66, 807. 06	
Delaware Breakwater; disinfecting plant, stewards' quarters, etc	16, 829. 72	
Cape Charles, Va., storeroom and kitchen, detention barracks, etc	11, 200. 00	
South Atlantic, repairs to ballast wharf, steam launch, etc	8, 753. 41	
Gulf, sulphur furnace, etc., and floating steamer *Welch*.	3, 906. 40	
San Diego, Cal., naphtha launch and laundry	6, 183. 10	
San Francisco, Cal., barracks building, repairs to *Omaha*, new fence, etc	5, 177. 79	
Beaufort, S. C., (sanitary relief sea islands)	5, 784. 33	
Account yellow-fever epidemic—		
Brunswick, Ga	72, 501. 91	
Conquests Camp	254. 21	
Fernandina, Fla	833. 75	
Jessup, Ga	1, 995. 45	
Savannah, Ga	2, 448. 97	
Brunswick, Ga., account quarantine station	9, 412. 27	
Quarantine service, 1894	17, 969. 13	
		324, 211. 66
Balance June 30, 1894		601, 773. 79

Appropriations for quarantine stations, act August 1, 1888.

Station.	Balance July 1, 1893.	Expenditures during fiscal year.	Balance June 30, 1894.
Cape Charles	$35 676. 21	$19, 587. 36	$16, 088. 85
Delaware Breakwater	2, 988. 54	*a* 1, 255. 96	1, 732. 58
Key West	20, 309. 11	7, 687. 79	12, 621. 32
Port Townsend	51, 145. 72	38, 151. 73	12, 993. 99

a Amount carried to the surplus fund of the Treasury.

Appropriations for quarantine stations, act August 1, 1888, and August 5, 1892.

South Atlantic, balance July 1, 1893	$7, 041. 89
Expended to June 30, 1894	6, 918. 73
Balance June 30, 1894	123. 16

Appropriations for quarantine stations, act March 3, 1891, and August 5, 1892.

Gulf, balance July 1, 1893	$8, 518. 27
Expended to June 30, 1894	7, 467. 75
Balance June 30, 1894	1, 050. 52

San Francisco quarantine, completing station, etc., act August 5, 1892.

Balance June 30, 1893	$16,089.30
Expended to June 30, 1894	15,956.45
Balance June 30, 1894	132.85

Chesapeake Bay supplemental station, act March 3, 1893.

Balance June 30, 1893	$7,000.00
Expended to June 30, 1894 (examining title)	65.00
Balance June 30, 1894	6,935.00

San Francisco, fumigating steamer.

Balance June 30, 1893	$1,016.32
Expended to June 30, 1894	496.75
Balance June 30, 1894	519.57

Key West quarantine, disinfecting machinery.

Balance June 30, 1893	$900.40
Expended to June 30, 1894	
Balance June 30, 1894	900.40

REPORTS OF FATAL CASES, WITH NECROPSIES.

REPORTS OF FATAL CASES, WITH NECROPSIES.

Following are the reports of fatal cases, together with necropsies, received from the several medical officers during the fiscal year:

INFLUENZA—BRONCHO-PNEUMONIA.

B. S.; aged 37 years; nativity, New York; admitted to marine ward St. Francis Xavier Infirmary, Charleston, S. C., May 1, 1894; died June 5, 1894.

History.—Was in hospital in Norfolk during April with headache, coryza, fever, and cough. Four days before admission the same symptoms returned. When admitted there was fever, cough, and very acute bronchitis, loud sibilant rales being heard over every portion of both lungs. Fever of an irregular, remittent type continued throughout, and symptoms were not in any way influenced by treatment. During the last week of life the sputum became more serous in character and occasionally blood stained. The cough became uncontrollable and distressing, and dyspnœa extreme, death ensuing from pulmonary œdema.

Necropsy.—There was no indication of disease in any organ except the lungs. The two lungs were quite similar in appearance. There were a few recent pleuritic adhesions; the bronchial tubes were universally and intensely inflamed and contained a blood stained serous exudate. Every portion of lung tissue crepitated on pressure, and exuded serum copiously on section. Scattered through the lungs were areas of splenization. The tissue of these areas was almost black in color and slightly firmer than the surrounding lung.

SCURVY.

W. H.; aged 52 years; nativity, England; admitted to United States Marine Hospital at San Francisco September 12; died September 13, 1893, at 3 o'clock p. m.

History.—On admittance patient complained of poor appetite, progressive emaciation, extreme weakness, discoloration of skin, and ulcerated and bleeding mouth. He had been on a long sea voyage, and although unwell for quite a long period he became worse about three weeks ago.

Inspection: Patient very much emaciated and anæmic. Ankles and legs were œdematous. Subcutaneous capillary hemorrhages on dorsum of hands, forearms, arms, legs, and thighs. Numerous ulcers of mouth. Gums were somewhat spongy in appearance.

Palpation: Apex beat of heart could not be felt.

Percussion: Area of hepatic dullness much diminished.

Auscultation: Breathing was broncho-vesicular in character. Few soft, bubbling rales scattered over lungs.

Heart's action very feeble. No valvular murmur.

Necropsy.—Lungs were both very dark in color, congested, and very œdematous. Heart was very small; weight, 140 grams; valves competent; coronary veins varicose. Liver was quite small; passive congestion present. Spleen weighed 50 grams and was quite resistant on section. Stomach partially filled with milk. Passive congestion of walls. Kidneys appeared normal. All the viscera were very pale. Abdominal muscles very dark in color.

ENTERIC FEVER.

M. S.; aged 21 years; nativity, Norway; admitted to marine ward St. Vincent's Hospital, Norfolk, Va., April 2; died April 11, 1894.

History.—Patient gave history of having been sick for a week previous to admission. He was found suffering with high fever, 104° to 105° in the morning and 105° to 106.5° in the evening. The temperature continued high throughout his illness, and baths had only a slight effect upon it, reducing it .5° to 1°. Tongue was dry and furred; diarrhœa was present, having three to seven stools in twenty-four hours. Tympanitis soon became marked. Epistaxis was rather profuse. The rash was very much like that of typhus fever, the spots being numerous, scattered over chest, abdomen, arms, and legs, and of a dusky hue. Delirium occurred early in the disease and was of a severe type; the baths had a beneficial effect upon it, but it was not lasting.

Necropsy (*eleven hours after death*).—External appearances: Body fairly well nourished; rigor mortis slight and post-mortem lividity not marked. Thoracic cavity: Lungs were congested and presented evidences of bronchitis; pleura normal; pericardium and heart healthy. Abdominal cavity: Liver was much enlarged and congested; spleen was several times its normal size and softened; Peyer's patches were thickened, infiltrated, and some were ulcerated; there was marked disproportion between the symptoms during life and the intestinal lesions; the mesenteric glands were much enlarged; kidneys enlarged and congested; pancreas normal.

DYSENTERY.

Case 1.

J. M.; aged 39 years; nativity, Norway; admitted to United States Marine Hospital, New Orleans, La., November 27; died December 9, 1893.

History.—Five days previous to admission to hospital the patient was first troubled with diarrhœa, the stools varying in number from six to twelve daily, bloody in character, and attended with considerable straining, tenesmus, and marked abdominal pain. The treatment consisted chiefly in the administration of intestinal antiseptics, astringents with opium, and daily flushing of the lower bowel. Hiccoughing was a very constant and depressing symptom during the last three days of his life, from which only temporary relief could be obtained.

Necropsy (*thirteen hours after death*).—Body that of a muscular, well-nourished young white man; post-mortem lividity slight; rigor mortis present in upper extremities, absent in lower; heart, weight 300 grams, slightly fatty, parietal and visceral layers of pericardium in contact and adherent throughout. Lungs tubercular; large cavity in left apex and numerous pleuritic adhesion on both sides; weight, right lung, 690 grams; left lung, 740 grams. Spleen soft, flabby, and very small; weight, 80 grams. Small intestine near the iliocæcal valve inflamed. Large intestine ulcerated throughout; descending colon dark in color, softened, and almost necrotic; perforation about 3 cm. in length was found in the sigmoid flexure, but, owing to adhesions to the pelvic wall, there was no escape of the intestinal contents. The liver was enlarged and was the seat of numerous abscesses, some of them as large as a hickory nut; weight, 2,140 grams. Gall bladder nearly empty. Left kidney, weight, 160 grams; right kidney, weight, 150 grams.

CASE 2.

S. W.; aged 53 years; nativity, New York; admitted to United States Marine Hospital, Vineyard Haven, Mass., September 9; died September 23, 1893.

History.—When admitted had offensive, bloody stools, about fifteen a day. Under treatment the amount of blood diminished, but the stools became more frequent, and the patient died on the following day.

Necropsy (eighteen hours after death).—External appearances: Post-mortem lividity slight; rigor mortis marked; body well nourished and pupils contracted. Thoracic cavity: Heart and pericardium normal; lungs and pleura healthy. Abdominal cavity: All the abdominal viscera were healthy except the large intestines. The walls of the rectum, sigmoid flexure, and descending colon were thickened, congested, and presented evidences of a croupous inflammation, with numerous patches of ulceration.

CASE 3.

C. McC. (colored); aged 30 years; nativity, Mississippi; admitted to the United States Marine Hospital, Memphis, Tenn., September 14; died September 27, 1893.

History.—Upon admission to the hospital this patient gave a history of having been sick for nearly a week with diarrhœa of dysenteric form. He was then having frequent bloody stools, with tenesmus, and was suffering from constant pain in the belly, with tenderness on pressure. His case did not seem worse than some others which end in recovery, but none of the methods of treatment usually effective had any power to check his disease, although some of the symptoms, particularly the discharge of blood from the bowels, were alleviated. There was irregular, slight fever at first, which was absent in the last few days of life.

Necropsy (two hours after death).—Rigor mortis was absent. The pupils were moderately contracted. The chest was not opened. The abdomen was opened and the liver was removed. It weighed 1,885 grams and was of a little harder consistence than ordinary, appearing to have some excess of connective tissue in its structure. The right lobe of the liver was adherent to the abdominal wall near its lower border and close to the falciform ligament. The adhesions were old and firm, evidently the result of some former perihepatitis. Some adhesions were also present between this lobe of the liver and the hepatic flexure of the colon, and apparently both recent and former inflammation of the peritoneum had existed at this spot. The colon was congested and soggy from cæcum to sigmoid flexure, and was especially diseased at the hepatic flexure. It was cut across just below the sigmoid portion, through a part that seemed quite healthy, and was removed from the body for examination. The mucous membrane was found to be congested and softened, the condition being worse in patches and slightly better in the descending than in the ascending colon. No conspicuous ulceration was found. The small intestine was nearly empty, and the belly before opening was quite shrunken. The presence of the old peritoneal adhesions about the hepatic flexure of the colon make it very probable that the attack of dysentery which caused death in this case was secondary to an attack had a considerable time previously, which may have been one cause of its fatality.

CASE 4.

S. M.; aged 23 years; nativity, Mississippi; admitted to the United States Marine Hospital, New Orleans, La., December 22, 1893; died January 6, 1894.

History.—The patient stated that he had suffered severely from diarrhœa for three days previous to his admission to hospital, the stools numbering from six to ten a day, tinged with blood and attended with considerable straining. His condition improved under the use of salol by mouth and copius rectal injections of boracic acid solution; and on the eighth day from his admission to hospital the number of stools were reduced to two per day, unmixed with blood, unattended by straining, and partially formed. Suddenly, however, without apparent cause, the diarrhœa returned, the stools became lienteric in character, but contained no blood, abdominal pain was intense, vomiting constant, great prostration and delirium at night.

Necropsy (*seventeen hours after death*).—Body that of a much emaciated young negro man; rigor marked. Heart normal; ante-mortem clots in both ventricles; weight, 240 grams. Lungs grayish-white in color and apparently bloodless; very firm old pleuritic adhesions on both sides; weight of right lung, 340 grams; of left, 280 grams. Small intestine: Ileum, inflamed and lower portion denuded of its mucous membrane. Large intestine considerably thickened in region of the sigmoid flexure and ulcerated from ileocæcal valve to rectum; its wall was softened, of a dark purplish color, and apparently almost gangrenous in spots. Kidneys pale; weight of right, 220 grams; of left, 230 grams. Spleen normal; weight, 180 grams.

CASE 5.

W. M.; aged 20 years; nativity, Virginia; admitted to the United States Marine Hospital, New Orleans, La., April 5; died April 14, 1894.

History.—On admission patient stated that he had been suffering from diarrhœa for the past week, pain in abdomen, tenesmus, poor appetite, but said he had passed no blood from his bowels.

Necropsy (*twenty-three hours after death*).—Rigor mortis well marked. Body that of a poorly nourished negro lad, somewhat emaciated. Heart filled with large ante-mortem clots in both cavities, also post-mortem clots, pale in color and somewhat flabby; valves normal; weight, 395 grams; veins engorged; pericardial sac normal; aorta normal. Lungs: Right, normal, weight, 410 grams; left, normal, weight, 390 grams. Pleural cavities normal; contained no adhesions. Peritoneum: Omentum dark and congested. Small intestine dark, congested (venous). Large intestine ulcerated throughout, almost necrotic. Rectum ulcerated and slightly prolapsed. Liver normal, adherent to diaphragm on upper front surface, showing the seat of an old localized peritonitis; color normal; weight, 2,460 grams. Gall bladder and ducts partially distended. Kidneys: Left, 200 grams in weight, normal; right, 200 grams in weight, normal. Spleen, weight, 230 grams, normal.

CASE 6.

B. B. (colored); aged 25 years; nativity, Mississippi; admitted to the United States Marine Hospital, Memphis, Tenn., December 4; died December 16, 1893.

History.—At the time of admission the patient gave a history of having been seized with dysentery somewhat abruptly eight days before. He was having frequent bloody stools, with tenesmus, considerable fever, and much pain and tenderness in the lower part of the belly. The case was a very bad one from the first and the patient very hard to manage, and no treatment proved of any avail. The fever subsided a few days before death and the stools lost their dysenteric character, although they continued to be very frequent.

Necropsy (*two hours after death*).—No post-mortem lividity. Rigor mortis absent. General nourishment, good. Pupils dilated. Sclerotics tinged greenish yellow. The heart weighed 240 grams. The pericardial sac was healthy, and the heart was normal in every respect. The left lung weighed 220 grams and the right 249 grams; both were healthy, and the pleural cavities were entirely free from adhesions. In the abdominal cavity localized peritonitis existed about the cæcum, with adhesions formed of newly deposited lymph, and there were slight signs of the same about the sigmoid flexure. No general peritonitis was present. The small intestine was congested. The large intestine was greatly inflamed and softened, particularly the cæcum and the transverse colon. Perforation of the cæcum had evidently taken place, the effect being limited by the adhesions present, as the cæcum was glued down by them in the iliac fossa. The vermiform appendix showed congestion. The large intestine was so rotten in the parts especially mentioned above as to pull apart in the attempt to remove it from the body. No perforation of the sigmoid portion had taken place, but lymph was deposited where the small intestine came in contact with it. The liver was studded with minute abscesses, between a pin's head and a pea in size. Their number might be estimated at a hundred, evenly distributed from surface to center. The liver was of normal color; weight, 2,070 grams. The gall bladder was completely empty. The left kidney weighed 190 grams; the right, 155 grams. Both were normal in appearance.

CASE 7.

J. R.; aged 25 years; nativity, England; admitted to the United States Marine Hospital, San Francisco, Cal., April 3; died April 4, 1894, at 8.45 p. m.

History.—Patient on admittance complained of frequent and watery stools, mixed with red blood. He presented a picture of extreme prostration; the heart sounds were inaudible and pulse imperceptible. Patient was employed on a vessel that runs to Panama, and the disease began at the time of leaving that port. He failed rapidly; at 5 o'clock, April 4, developing a maniacal delirium, with succeeding collapse from which he could not be roused.

Necropsy (fourteen hours after death).—Rigor mortis and post-mortem lividity. The thoracic viscera, excepting the ventricles of the heart, which contained large antemortem clots, appeared normal. The spleen, liver, kidneys, and bladder were healthy. The stomach was in a condition of inflammatory congestion. The lower part of the ileum contained many necrotic areas and a small perforation near the ileocæcal valve. Colon: The mucous and submucous coats and in some spots the muscular coat were riddled with sloughing ulcers, with here and there islands of thickened and infiltrated tissue intervening.

INTERMITTENT MALARIAL FEVER—CONGESTIVE TYPE.

W. W. M.; aged 49 years; nativity, Maine; admitted to the United States Marine Hospital, Boston, Mass., August 14, 1893, suffering from malarial fever. He stated that he had been having two chills each day for a week or more. Died August 16, 1893.

Necropsy (twenty-one hours after death).—Body of medium size, white, male, emaciated, and skin pale. No cicatrices observed. Post-mortem lividity on dependent parts of body. Rigor mortis marked. Pericardial sac contained normal quantity of fluid. Heart in systole; its valves pale, flabby, and apparently stretched, owing to heart's having ceased to beat while in systole; weight of heart, 350 grams. Larynx and trachea were slightly congested, and had adhering to their mucous surfaces a small quantity of viscid mucus. Pleura was free from adhesions to lungs. Both lungs were congested, and posterior inferior portions of both were œdematous. Weight of lungs: Left, 950 grams; right, 860 grams. Peritoneum apparently congested. Tongue coated with brownish-white fur. Stomach, post-mortem ecchymoses. Intestines apparently normal. Liver enlarged and of dark, smoky glass or slate color; its tissues soft and pulpy. Weight of organ, 2,120 grams. Gall bladder contained 140 cc. thick, dark fluid. Pancreas weighed 160 grams. Kidneys both lobulated; capsule stripped with difficulty, tearing instead of peeling. Line between cortical and medullary substance indistinct. The kidneys were of equal weight, viz, 180 grams. Urinary bladder distended and full of fluid. Spleen so soft and pulpy that it could not be wholly removed from body; weight, 590 grams approximately. Head and scalp normal in appearance. The pia mater was inflamed. Brain small and of characteristic peculiar leaden color seen in persons dead from profound malarial poisoning. Weight of brain, 1,280 grams.

REMITTENT MALARIAL FEVER.

T. T.; aged 24 years; nativity, Norway; admitted to the United States Marine Hospital, Wilmington, N. C., October 10; died November 25, 1893.

History.—He was suffering from remittent malarial fever of a severe type. After convalescence began he complained occasionally of headache, and less frequently of pain in the region of the stomach. From the 18th to the 23d of November he was attacked each day, about 2 o'clock p. m., with pain in the head. He was better the next two days; was free from pain and in good spirits. On November 25, at 5 o'clock p. m., he suddenly fell forward from his seat and died within a few seconds.

Necropsy.—A very large, tall man. Post-mortem lividity well marked; rigor mortis moderate; general nourishment poor; pupils dilated. The heart was normal, but pale, weak, and flabby, and stopped in systole; all the valves were competent. The lungs were congested; the left weighed 780 grams and the right 990 grams. The caliber of the transverse colon was very small. The liver weighed 2,820 grams, very large and congested. The anterior border of the right lobe was very black. The kidneys weighed—left, 280 grams; right, 230 grams. They were more highly congested than any of the internal organs. The spleen was very large and highly congested. It weighed 980 grams. The brain was normal; weighed 1,600 grams; its vessels were engorged.

MALARIAL FEVER—CONGESTIVE TYPE.

W. F. J. (white); aged 42 years; nativity, Massachusetts; admitted to the United States Marine Hospital, Boston, August 10, 1893, suffering from malarial poisoning of congestive type. He was partially unconscious when admitted, passing fæces and urine involuntarily. Died August 11, 1893.

Necropsy (thirteen hours after death).—Body of medium size, male, slightly built, emaciated; rigor mortis marked; post-mortem lividity on dependent portions of body. Heart in systole; its valves pale and flabby; weight, 340 grams. Larynx and trachea covered with viscid mucus and somewhat inflamed. Both lungs in state of hypostatic hyperæmia in posterior parts, otherwise normal Left weighed 500 grams, right, 640 grams. Pluræ normal. Stomach and intestines normal. Liver enlarged and congested; weight, 2,170 grams. Gall bladder dilated and full of thick, viscid bile. Left kidney apparently normal; weight, 180 grams. Right kidney lobulated, enlarged; capsule torn off, as it could not be separated; line between cortical and medullary substance poorly marked. Surface of organ covered with cysts, ranging from size of a pea to that of a filbert. Organ weighed 200 grams. Spleen soft, pulpy, and three times normal size; its substance easily torn; weight, 650 grams. Scalp and calvarium normal. Weight of brain, 1,475 grams. Pia mater inflamed at convexities. Meningitis of convexities.

ERYSIPELAS.

C. P.; aged 50 years; nativity, Pennsylvania; admitted to the marine ward of the German Hospital at Philadelphia, January 1, 1894, in an exhausted condition and was almost totally blind and deaf, suffering from an acute conjunctivitis of one eye and a cataract of long standing. There was a marked discharge from both ears, and the patient was evidently suffering from otitis media (acute suppurative). His skin was deeply jaundiced; pulse was weak. The patient was put on antisyphilitic treatment and gradually improved, the otorrhœa diminished and finally ceased; the eye was greatly improved. On tonic treatment the patient improved so that he was discharged at his own request February 13, 1894.

On February 22 patient again applied for admission. At this time the right side of his face was much swollen, tense, and painful on pressure, having a dark purplish hue, resembling a severe contusion. He denied all history of a contusion, and as he had a temperature of 39.3° C. he was isolated as a suspicious case of erysipelas. The swelling of the face began to spread, the opposite side becoming affected and a distinct line of demarcation being present on the forehead. Physical examination showed the lungs normal; heart rapid and weak, but no organic murmur was heard; liver was slightly enlarged; spleen enlarged; abdomen was distended, tense, but not tender. Patient complained of intense pains throughout the body, especially the head. Minute purpuric spots appeared over the entire surface of the body. At one time the legs rapidly swelled and became very tense, but after a few days the swelling disappeared as rapidly. Patient suffered twice from attacks of heart failure, the pulse becoming lost at the wrist, the breathing shallow, and had intense pain over region of heart. The swelling of the face disappeared, the dark color remaining. The urine contained albumen, but repeated examinations failed to reveal any casts. Patient was put on iron, tonics, good food, and stimulants. The temperature came down to normal, and the patient seemed to be improving, but the pains continued. Early in the morning of March 12 the patient was found to be in a state of coma; the breathing was stertorous in character, fourteen to the minute; pupils contracted and regular, not responding to light; pulse was about normal. The patient could not be aroused. Atropia and stimulants were given, after the administration of which the patient could be aroused with great difficulty, but would immediately sink again into a comatose state. He died at noon, March 12, 1894.

Necropsy.—Rigor mortis marked. Pupils were dilated. Lungs were congested, and there were indications of an old pleurisy at the bases of both lungs. There were no adhesions of the pleura. Heart: The valves were normal, the muscle was somewhat pale. Aorta showed beginning calcareous infiltration. There was no pericarditis. Liver was large and congested, the remains of an old hepatitis. Spleen was much enlarged and lobulated. The suprarenal bodies were normal. The kidneys were much congested.

PYÆMIA—PERINEPHRITIC ABSCESS.

E. C.; aged 66 years; nativity, Maine; admitted to the United States Marine Hospital, Boston, Mass., March 30; died April 5, 1894.

This man was treated in this hospital from January 10 to March 17, 1894, for a very large carbuncle on back of neck. Under supporting treatment, free drainage, and careful dressings, the case progressed favorably and he left hospital in fair condition, the carbuncle giving him no trouble. When readmitted, on March 30, complained of pain and oppression in chest; temperature at this time 39° C. After three days in hospital temperature became normal. He was very anæmic in appearance and inclined to sleep most of time. Died April 5 at 8 a. m.

Necropsy (three hours after death).—Body medium size, fairly muscular; no marks or ecchymoses. Thorax: Heart weighed 375 grams; was covered with fat. Valves competent, but were covered with acute vegetation, such as are seen in pyæmia. Aorta appeared to be dilated at arch. Pleura adherent and inflamed. Lungs contained metastatic abscesses the size of a pea; hypostatic congestion posteriorly. Weight of left lung, 370 grams; weight of right lung, 450 grams. Liver amyloid, tough, and at one point slightly softened, indicating beginning abscess; weight of liver, 1,850 grams. Kidneys slightly larger in appearance than normal. They were exceedingly tough and hard, but capsule peeled readily; both surrounded by adipose tissue. Left kidney surrounded by a perinephritic abscess, which involved and destroyed suprarenal capsule. About 150 c. c. yellow pus present. Weight of kidneys: Left, 190 grams; right, 200 grams. Spleen dark blue in color; weight, 250 grams. Intestines and bladder normal. Brain and cord not examined.

SYPHILIS, SECONDARY—MENINGITIS—INSANITY.

J. McD.; aged 44 years; nativity, Louisiana; admitted to the United States Marine Hospital, New Orleans, La., August 7; died August 13, 1893.

History.—The patient was escorted to the hospital by friends who could give no very intelligible account of him other than that he was considered "loony" and needed treatment. The patient himself was apparently dazed and but little information could be had from him. His pulse, temperature, and respirations were not exaggerated, and, as abundant signs of syphilis were apparent, a prompt and vigorous course of specific treatment was entered upon. Within forty-eight hours the patient's taciturnity developed into delirium; he became abusive to and assaulted fellow-patients, and was with difficulty restrained. He was transferred to the Louisiana Retreat for the Insane, as offering better facilities for his safe detention. Aphonia, immediately followed by stupor and coma, preceded his death.

Necropsy (four hours after death).—Body that of a muscular, fairly nourished white man of middle age. Height, 1.65 metres; circumference of shoulders, 90 cm. Post-mortem lividity slight; rigor mortis normal. Brain only examined. Face and scalp congested; skull of medium thickness and but slightly asymmetrical. Membranes of brain studded along superior cerebral line with minute tubercles. Brain, weight, 1,220 grams. Superior-longitudinal and inferior-longitudinal sinuses inflamed and thickened with lumpy tuberculoid matter at intervals.

GENERAL DEBILITY—CONGESTION OF LUNGS.

S. T. (colored); aged 58 years; nativity, Delaware; transferred from Philadelphia, Pa., and admitted to the United States Marine Hospital, Baltimore, Md., February 19, 1891; died August 25, 1893.

History.—Was in Marine Hospital in Philadelphia from July, 1890, to February 19, 1891, for rheumatism. He had no swelling of joints, but considerable pain in them, sometimes of a shooting character. Bowels irregular; appetite and general health fairly good for a man of his age (he is evidently about 75 years of age). He continued in this condition for about one and a half years, until September 18, 1892. At this latter date he complained of his extremities feeling numb, and about February, 1893, was confined to his bed and seldom got up except to go to water-closet. On July 19, 1893, he fell and dislocated right shoulder (subcoracoid); this was reduced. On the 20th he was cold and weak; stimulants and hot bottles ordered. For two or three days after this had no control of sphincters. July 28, he complained of sudden pain in side, and upon examination found rib broken. July 30, seemed to have lost use of right arm and had considerable pain. August 9, was very dull and could not speak well; no pain. August 25, was unconscious all day to time of death; at 11.30 respiration was very labored and had been so all morning.

Necropsy (seven hours after death).—Heart light in color and slight roughness around valves. The superior lobes of the lungs normal; the inferior on either side were very much congested, and bronchioles and air cells clogged with blood; when put in water sank rapidly. The texture itself was very little, if at all, altered. There was an enormous deposit of fat on the kidneys; they were very light in color, and the external surface was marked by large and small blebs, which when cut exuded considerable yellowish fluid (serum). They were normal in size, but rather flabby. The line of demarcation between the cortical and medullary portions was almost obliterated. Liver and bladder normal.

TUBERCLE OF LUNG.

CASE 1.

L. J. (colored); aged 30 years; nativity, Virginia; admitted to the United States Marine Hospital, Baltimore, Md., May 9; died July 21, 1893.

Upon admission examination revealed a cavity at apex of left lung. Patient was soon confined to bed, suffering with the following symptoms: Night sweats, severe cough, much pain on left side, labored respiration, weakness and rapid emaciation. He had no hemorrhages. The above symptoms increased, and later he had severe diarrhœa.

Necropsy (*five hours after death*).—The left lung contained two large cavities in upper lobe and one very large one in inferior lobe; the remainder of the lung tissue was filled with tubercular deposits. The right lung had a large cavity in superior lobe, and the rest of this lung tissue was filled with tubercles. The lungs were thoroughly bound down by tubercular pleuritic adhesions to pericardium, diaphragm, and the thoracic parietes. The intestines and peritoneum were studded with tubercular deposits, and there were marked adhesions. The pericardium contained a quantity of clear serous fluid. Heart normal; liver enlarged and dark in color.

CASE 2.

F. L.; aged 32; nativity, Massachusetts; admitted to the United States Marine Hospital, Chicago, Ill., January 28; died August 17, 1893.

History.—About the latter part of December, 1892, while doing some heavy lifting, he felt a sharp pain in left side of small of back, as if something had snapped or given way. He was unable thereafter to do any heavy work, but continued on duty until admitted to hospital, about a week later. Had frequent chills and fever and night sweats. Back very tender and painful. Severe cough and expectoration, with pain in region of kidneys as well as stomach and bowels. He became rapidly emaciated and died of general tuberculosis.

Necropsy (*twenty hours after death*).—Height, 5 feet 9 inches; circumference at shoulders, 18 inches; post-mortem lividity absent; rigor mortis slight; pupils dilated. The heart, after opening, weighed 190 grams; the pericardium contained a slight amount of fluid. The left lung weighed 1,370 grams; the right lung, 1,620 grams. Both lungs infiltrated with tubercular deposits. The pleural cavity contained about 200 c. c. of fluid. The omentum contained a great quantity of tubercular nodules. The liver was congested, of a dark purple color, and weighed 1,450 grams. The gall bladder and ducts were distended with bile. The kidneys weighed—left, 170 grams; right, 163 grams. The spleen was congested and weighed 160 grams. The brain, with membranes, weighed 1,470 grams.

CASE 3.

S. C.; aged 26 years; nativity, Virginia; admitted to the United States Marine Hospital, Cairo, Ill., October 22; died November 6, 1893.

History.—Patient was sent to this hospital from Little Rock, Ark., under the diagnosis of tubercle of lung, with the statement that tubercle bacilli had been found in the sputa in large numbers. Cough was very troublesome, especially at night, and the expectoration was copious. Patient was very feeble; he suffered from dyspnœa continuously. Pulse very rapid and dicrotic. Vocal fremitus increased over right lung; percussion note increased in pitch; subcrepitant rales throughout lung. On left side the percussion note was tympanitic; breath sounds were absent. Patient gradually weakened, and died November 6 at 9 a. m.

Necropsy (*twenty-four hours after death*).—Body emaciated; pericardium thickened and the quantity of pericardial fluid increased. Heart apparently normal; right lung firmly adherent to chest wall; studded with tubercles and contained several small cavities. The left lung was about as large as two kidneys and firmly adherent to posterior wall of chest. The pleura was greatly thickened, gray in color, and at the base of the cavity was about 100 c. c. of purulent fluid. Stomach normal; liver somewhat fatty; spleen small and capsule shriveled. The mesenteric glands were enlarged. The intestines were apparently normal; kidney normal; bladder contained a small quantity of urine. Brain apparently normal.

CASE 4.

F. C.; aged 31 years; nativity, Massachusetts; admitted to the United States Marine Hospital, San Francisco, Cal., February 8, 1894.

History.—The patient complained of cough, dyspnœa, night sweats, and pain in the left side. He was also suffering from aphonia and hæmoptysis. The physical examination revealed a general tubercular infiltration of both lungs. On March 20 the patient was seized with an attack of asthma, and died at 3.50 p. m., after having been unconscious for four hours.

Necropsy.—The post-mortem examination was held at 2 p. m. March 21, twenty-two hours after death. Post-mortem lividity and rigor mortis were noted. The body was well nourished. Heart: Walls normal, valves healthy; ante-mortem clots in both ventricles, those in the right ventricle being quite large. General pleural adhesions on right side. On left side few lateral adhesions, but none anterior or posterior. Left lung gritty and caseous deposits at apex. In the middle of the organ, near its external surface, a cavity with a capacity of 50 c. c. was seen, surrounded by cirrhotic tissue. The base was somewhat engorged. The apex of the right lung appeared to be sound. The lower lobe was in a state of congestion (red hepatization). Throughout the organ a number of calcified masses were seen. Both lungs floated on water. The glottis and epiglottis were congested and presented minute tubercular deposits. Liver engorged; left lobe somewhat thinner than normal. Other viscera sound.

CASE 5.

M. O.; aged 45 years; nativity, Massachusetts; admitted to the United States Marine Hospital, San Francisco, Cal., May 5, 1892, suffering from fistula in ano. He subsequently developed tubercle of lung, and has been under treatment for the latter trouble since March, 1893. Died at 12.30 a. m. April 28, 1894, after having been unconscious for about eighteen hours.

Necropsy (*ten and a half hours after death*).—Rigor mortis and lividity well marked; body well nourished. The pericardial sac was healthy, and contained about 50 c. c. of fluid. A large ante-mortem clot was found in the right ventricle. All the valves were competent. There were a few atheromatous patches on the mitral valve and in the ascending portion of the arch of the aorta. There were a few adhesions of the right pleura, chiefly at the apex. The left pleura was adherent all over. Two large cavities were at the apex of left lung; congested at the base. Tubercular infiltration of right lung; base congested. Thyroid cartilages calcified; glottis somewhat thickened. Stomach enlarged; walls studded with perforating ulcers of various sizes. The liver was undergoing fatty degeneration. The spleen was irregularly enlarged. There was a large cyst at the upper extremity of the right kidney, and several small cysts at the lower extremity of left. Other organs not examined.

CASE 6.

A. B.; aged 45 years; nativity, Scotland; admitted to the United States Marine Hospital at San Francisco, Cal., November 21, 1892; died February 23, 1894.

History.—Patient on admittance was suffering from advanced tuberculosis. Treatment throughout was merely palliative.

Necropsy (*six hours after death*).—Post-mortem rigidity. Patient greatly emaciated. General adhesion of both pleuræ. Left lung contained much cicatricial tissue and was riddled with cavities and patches, undergoing caseous degeneration. Upper lobe of right lung was infiltrated with miliary tubercles. Middle and lower lobes in a condition of congestive inflammation and sank in water. Ante-mortem clot in left ventricle of heart; no evidence of disease. Mesenteric glands were involved, some of them caseous, others calcified. On a lower loop of the ileum was a small congested area dotted with tubercles. The other viscera were normal.

CASE 7.

E. N.; aged 41 years; nativity, Norway; admitted to the United States Marine Hospital at San Francisco, Cal., June 12, 1893; died May 4, 1894, at 2.30 o'clock a. m.

History.—On admittance patient complained of cough, with expectoration of purulent sputum, dyspnœa, pain in chest, and loss of flesh. Treatment was instituted, and his condition remained about stationary until the evening of May 3, 1894, when he developed a sudden, large hemorrhage. After the first gush of arterial blood, amounting to about 500 c. c., there kept up a slight oozing until death supervened from exhaustion.

Necropsy (*eleven hours after death*).—Post-mortem rigidity, but no lividity. Body fairly well nourished. Heart contained some fatty deposits; the whole organ was larger than normal and weighed 420 grams. Lungs floated in water. Right lung was greatly reduced in size. The apex was nearly airless, being composed of cicatricial tissue. The middle lobe contained several small caseous masses. The lower lobe had been much reduced in size from compression by the liver. The right side of the chest was flattened and the pleuritic surfaces were adherent. Left lung near apex contained a large blood clot which occupied a cavity with a capacity of 75 c. c. Several smaller empty cavities were found in the rest of the upper lobe. The whole of the lower lobe had minute tubercles disseminated throughout its structure. Anteriorly and at the apex the pleural surfaces were adherent. The liver was about twice the normal size, weighing 4,070 grams, and was in a condition of waxy degeneration. The spleen was enlarged; weight, 480 grams. Both kidneys showed marked amyloid changes and were about twice the usual size. The alimentary tract was healthy. A scrotal hernia containing nearly all of the omentum existed on the left side.

CASE 8.

H. A.; aged 45 years; nativity, Germany; admitted to the United States Marine Hospital, San Francisco, Cal., August 22, 1893; died June 26, 1894, at 9.30 o'clock p. m.

History.—On admittance patient complained of night sweats, purulent expectoration, cough, poor appetite, vomiting, and loss of 16 kilograms in weight. Examination indicated tubercular deposit throughout left lung. During period of treatment lung steadily underwent disintegration. Exhausting night sweats were a recurring and obstinate feature. On the night of June 26, 1894, patient had a sudden hemorrhage and immediately died.

Necropsy (*thirteen hours after death*).—Rigor mortis; no lividity; body wasted; heart normal; about 50 c. c. serum in pericardium. Right lung and pleural sac unusually large. Quite a large emphysematous dilatation at apex, also a few tubercles. Left lung entirely broken down with abscess cavities. A branch of the pulmonary vein was eroded, and was the cause of the hemorrhage; abdominal viscera normal.

CASE 9.

F. S.; aged 34 years; nativity, Germany; admitted to the United States Marine Hospital at San Francisco, Cal., December 2, 1893; died June 16, 1894, at 3.30 p. m.

History.—On admittance patient had been suffering from an extensive ulcer of the penis for four months, also bubo of the right groin for nine days. No history of specific infection. Neither ulcer of penis nor inguinal bubo were materially affected by treatment. Soon after coming to hospital he showed signs of tubercular disease of lungs. On June 3, 1893, patient had a severe chill, followed by continuous fever until death.

Necropsy (*eighteen hours after death*).—Rigor mortis and post-mortem lividity pronounced. Heart normal. Slight adhesions about apex of left lung and posteriorly; two cavities of about 25 c. c. capacity each near apex; rest of lung filled with minute tubercles. Firm adhesions all around the right lung. Large cavity near apex. Tubercular deposits and caseation throughout lung. Liver, spleen, and kidneys healthy.

CASE 10.

T. R.; aged 20 years; nativity, Virginia; admitted to marine ward St. Vincent's Hospital, Norfolk, Va., January 17; died February 1, 1894.

History.—Patient had cough; fever; was much emaciated, and presented all the physical signs of tubercle of lungs.

Necropsy (*twelve hours after death*).—External appearances: Rigor mortis slight; body much emaciated. Thoracic cavity: Both pleuræ were studded with gray tubercles; there was small quantity of fluid in pleural cavities and numerous adhesions. Both lungs were much enlarged and studded with tubercles, gray and yellow. The entire lung structure was inflamed. A small cavity was found in the apex of the left lung. The pericardium was slightly congested. Heart normal. The glands in the posterior mediastinum were enlarged. Abdominal cavity: The peritoneum was only slightly inflamed, although numerous tubercles were found in its structure. The liver was of normal size. The mucous membrane of the ileum was congested, and the glands showed tubercular infiltration and ulceration. Spleen was enlarged and softer than normal. Pancreas normal. Kidneys normal.

CASE 11.

J. A.; aged 49 years; nativity, Sweden; admitted to the United States Marine Hospital, Chicago, Ill., May 20; died August 25, 1893.

History.—Had been suffering from tubercle of lung for several years, and was in hospital each winter, but would go out when the weather became warm again. On his last return to the hospital was much emaciated and suffering from tubercular diarrhœa. He gradually failed, the disease following its usual course until death.

Necropsy (*eighteen hours after death*).—Rigor mortis well marked. Body much emaciated. Pericardial sac contained about 30 c. c. of fluid. Heart weighed 225 grams; valves competent. Dense old pleuritic adhesions on both lungs, which were filled with tubercles and cavities of various sizes. Small intestines congested. Tubercular ulcers scattered along ileum. Liver congested; weight, 1,250 grams. Left kidney weighed 170 grams; right, 130 grams; congested and contracted. Spleen: Color dark, pulpy; weight, 210 grams. Other organs not examined.

CASE 12.

D. R.; aged 50 years; nativity, Scotland; admitted to the United States Marine Hospital, San Francisco, Cal., June 23, 1891; died November 11, 1893, at 4 o'clock a. m.

History.—On admittance complained of cough, night sweats, hæmoptysis, and much expectoration. Physical examination revealed physical signs of tubercle of lung, the right lung being affected. The patient continually became worse, and left lung became affected with tubercle; he had several attacks of hæmoptysis toward latter part of illness; his night sweats became very exhausting. On October 28, 1893, patient became delirious; power of muscular coordination was impaired and had only imperfect conception of words. On October 29 motility was good, but amnesic aphasia was complete. His condition now became steadily worse, and he died at 4 o'clock a. m. November 11, 1893.

Necropsy (eleven hours after death).—Body was well nourished; there was no emaciation; no discoloration. Left lung: Small caseous tubercular foci studded the apex; very little crepitation at apex; rest of lung healthy. Right lung: There was about 500 c. c. of pus in pleural cavity; the parietal pleura was calcified in many places, the thickness at one place being 1 mm. The lung was about one-third its normal size, as much of it was disintegrated. Much of the surface next to the pus cavity was eroded, the pleura being absent. There were numerous small cavities and caseous spots throughout right lung. Heart was about normal in size; there was a mitral incompetence; some endarteritis of arch of aorta; liver was healthy; spleen was healthy; both kidneys were congested; left contained two small cysts. There was no inflammation present; brain was congested; no lesion found.

CASE 13.

N. S.; aged 20 years; nativity, Kentucky; admitted to the United States Marine Hospital, Cairo, Ill., July 29; died August 1, 1893.

History.—Patient was brought to hospital in a carriage from steamer coming from Paducah, Ky., for treatment. Had been unable to do work of any kind for several months. Cough, expectoration, night sweats, great emaciation. Morning temperature, 39° C.; evening, 40° C. He failed rapidly, and died at 8.45 p. m. August 1, 1893.

Necropsy (thirteen hours after death).—Body extremely emaciated. Rigor mortis well marked. Right lung was firmly adherent to chest wall, completely obliterating the pleural cavity. There were several small cavities at apex. Left pleura thickened throughout and gray in color. There were numerous adhesions. The lung was a tuberculous mass. Pericardium thickened and the fluid slightly increased in quantity. Heart apparently normal. Stomach normal. Liver enlarged and fatty. Spleen a little enlarged, soft, and friable. Intestines apparently normal. Mesenteric glands enlarged. Kidneys were pale, but otherwise healthy. Bladder contained small quantity of urine.

CASE 14.

Empyema.

T. V.; aged 22 years; nativity, San Salvador, Central America; admitted to the United States Marine Hospital, San Francisco, Cal., on June 7, 1892; died June 19, 1894, at 2.30 o'clock a. m.

History.—On admittance patient had a large pleuritic effusion of the right side. Aspiration was twice performed, when the serous effusion became infected with pus organisms. An incision was made into the thorax and a large quantity of pus evacuated, a drainage tube being left in the wound. This proved insufficient for drainage, and on January 22, 1893, a portion of the seventh rib, about 5.5 cm. in length, was excised and a considerable quantity of fetid pus removed. Discharge of pus continued, and his general condition vacillated between improvement and decline, until August 23, 1893, when pus commenced to form in larger quantity, and another incision into pleural sac was made posteriorly, just below the inferior angle of the scapula. On August 26, 1893, portions of the third, fourth, fifth, sixth, and seventh ribs were resected and the pleural cavity curetted. Pain and pus discharge kept up without abatement until, on September 5, 1893, under ether, 3 cm. were taken off of posterior ends of ribs previously operated upon. Thenceforth pleural cavity was daily irrigated with antiseptic solutions and packed with iodoform gauze. Tuberculosis of the previously sound lung (left side) developed. Long-continued suppuration, with intermittent pyrexia, cough, pain, loss of sleep, and impaired nutrition, at last overcame the vital forces.

Necropsy (eight hours after death).—Rigor mortis well marked; body emaciated. Right thoracic walls were sunk in so that the cavity was diminished at least two-thirds. Pericardium contained considerable fluid; heart normal in size and healthy. Right lung was intact, but nearly airless; it was contracted into a cylindrical mass about 13 cm. long by 5 cm. in diameter and lay against the bodies of the vertebræ. Left lung contained a few scattering tubercles and the lower lobe was congested.

There were no pleuritic adhesions. The pleural sac contained much purulent fluid. Several enlarged and caseous mediastinal glands were found. Liver slightly enlarged and weighed 1,812 grams. Spleen enlarged and tough; weight, 710 grams; compared with body weight, 1 to 70. Left kidney enlarged and in the condition of amyloid degeneration; weight, 270 grams. Right kidney in same condition; weight, 280 grams.

CASE 15.

Pericarditis.

T. L.; aged 30 years; nativity, Norway; admitted the last time to the United States Marine Hospital, New Orleans, La., June 3, 1892; died November 1, 1893.

History.—This patient had been a frequent inmate of marine hospitals for the past five years with diseases of the respiratory system, and on admission to this hospital displayed by the symptoms that the slow, resistless march of pulmonary consumption had begun. Later in the disease the signs of pericardial involvement became obvious, and although both diseases were combated with all the known palliatives he lingered until his death as above noted.

Necropsy (fourteen hours after death).—Body that of a muscular young white man; much emaciated; pallor noticeable. Rigor mortis slight. Heart: Weight, 310 grams; surface roughened; pericardial sac partly adherent to the heart, and cardiac surface very rough. Aortic valve competent; mitral valve incompetent; valves slightly thickened. The proximal margins of the pulmonary and tricuspid valves were each the seat of a papillary growth, projecting through their orifices, that of the latter being 13 cm. long and 0.5 cm. in diameter, and its free end extending through the pulmonary orifice. Larynx and trachea were denuded of mucous membrane and much congested. Lungs: Each weighed 550 grams, and each, with the exception of large cavities in the apex of right lung, a mass of tubercle throughout. Left pleural cavity obliterated by old adhesions; right, free below, but obliterated in upper one-half. The abdominal viscera contained but very few tubercles, and, except a slight congestion of the left kidney, were apparently normal. Weights: Liver, 1,485 grams; pancreas, 60 grams; kidneys, left 170 grams, right 172 grams; spleen, 260 grams. A slight pachy-meningitis was observed along the antero-posterior fissure, and the meninges of the cord, which in its upper portion showed an excess of fluid, gave evidence of recent inflammation.

CASE 16.

Aneurism of thoracic aorta.

J. S.; aged 45 years; nativity, England; admitted to the United States Marine Hospital, San Francisco, Cal., February 6; died May 21, 1894, at 12 o'clock m.

History.—On admittance patient complained of prostration, pain over stomach and back, anorexia, constipation, and distressing cough. General appearance that of a man with marked cachexia. Flat dullness toward base of left lung, and a prominent left latero-posterior curvature of the spinal column. A hypodermic needle revealed presence of serum in the left pleural cavity. Aspiration was performed and 750 c. c. of a reddish-tinged serum withdrawn. Subsequently dyspnœa necessitated aspiration several times. Microscopical examination of the sputa disclosed tubercle bacilli. Later on pulsation was discovered in the prominence over the spinal column in the mid-dorsal region. The heart sounds were audible, but no bruit. Various diagnoses were entertained, such as new growths, pulsating empyema, abscess from Pott's disease, and aneurism of the thoracic aorta. Three weeks before death patient developed general anasarca. At first there were occasional attacks of violent pain, with dyspnœa, and these attacks grew in frequency toward the end.

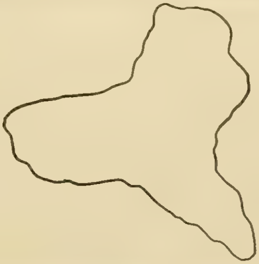
Necropsy (ten and one-half hours after death).—Post-mortem rigidity. No discoloration of body, which was extremely wasted. Right pleural surfaces slightly adherent at apex. Small quantity clear fluid in sac. Right lung dark color and exuding frothy matter on section. Upper portion middle lobe a little congested. Left pleural surfaces considerably thickened and firmly united. Left lung much reduced in size, and broken down with holes filled with pus or caseous matter. Heart was small, weighing only 180 grams, but appeared healthy. There was a large sacular aneurism springing from the posterior wall of the thoracic aorta. The orifice of communication was 4 cm. long by 1½ cm. wide and elliptical in shape, being situated on a level with the seventh dorsal vertebra. The bodies of the dorsal vertebræ, from the third to the ninth, inclusive, were eroded, the fifth and sixth being almost entirely absorbed. The ribs on the left side were eroded, the fifth and sixth dislocated, the seventh, eighth, and ninth eroded through a short distance from the vertebra. On the right side the seventh and eighth ribs were eroded, the seventh being detached. The aneurismal sac was incomplete posteriorly. It would hold about 2 liters. The aneurismal wall was made up of successive fibrinous layers, which had undergone organization from before backward. The whole mass weighed 1,000 grams. Liver was adherent to diaphragm and rather small in size. On section it cut like leather, and was found to be in a condition of fibroid degeneration. Spleen was slightly adherent to the diaphragm, but normal in appearance. Capsules were non-adherent on both kidneys; cortical substance in each organ somewhat thinned. Each suprarenal capsule was larger than normal and very hard. The other viscera were healthy.

CASE 17.

Pyonephrosis.

H. H.; aged 39 years; nativity, Nova Scotia; admitted to the United States Marine Hospital, San Francisco, Cal., November 27; died December 12, 1893, at 8 o'clock a. m.

History.—On admittance complained of cough, hæmoptysis, night sweats, and rapid loss of flesh. Physical examination revealed signs of tubercle of lung, mostly situated in left lung. The patient's condition became steadily worse, all the symptoms growing more and more aggravated. On December 5 he had a severe attack of gastralgia, and on the 6th fell into a semicomatose condition. From this time on it was only possible to arouse him sufficiently to administer nourishment, until 12 m. of December 11, when the coma became profound. He died at 8 o'clock a. m. on December 12, 1893.



Necropsy (six hours after death).—No rigor mortis. Body was much emaciated. Post-mortem lividity present. Pleuritic adhesions existed on both sides, anteriorly, laterally, and posteriorly. Right lung was congested and infiltrated with caseous tubercular matter. Left lung contained numerous cavities. The heart ventricles contained post-mortem clots. The wall of the left ventricle was found to have two small patches of tubercular disease near the auriculo-ventricular junction. The liver was slightly fatty; otherwise normal. The capsules of the kidneys were found non-adherent. Four small areas of tubercular infiltration were discovered beneath the capsule, on the cortex of the right kidney, near the pelvis. Left kidney was larger than normal and of irregular contour. The cortical and medullary portions were destroyed, little remaining besides the capsule, pelvis, and reflections of the infundibula. On section of the kidney, about 50 c. c. of urine and pus escaped. Within the pelvis was found an oxalate of lime calculus in size and shape roughly represented above.

CASE 18.

Meningitis.

J. M. F.; aged 38 years; nativity, Prince Edward Island; admitted to United States Marine Hospital, Boston, Mass., January 10, 1894, suffering with tuberculosis of lungs; died May 21, 1894, at 4 a. m. Three days before death he suffered from delirium. Had suffered for several weeks with diarrhœa and insomnia.

Necropsy (seven hours after death).—Body tall, slightly built, emaciated. Cicatrix on each knee. Small papilloma on inside of right thigh. On right forearm had anchor and cross in India ink, with heart worked in center and wreath beneath. Rigor mortis not marked. No post-mortem lividity. Heart weighed 350 grams. Ante-mortem clot in right side. Valves pale and flabby; all competent except mitral, which was thickened and contained old vegetations. Larynx contained tubercle. Both lungs infiltrated with tubercle; a few small pus cavities in each. Left lung weighed 950 grams; right, 1,350. Pleura adherent. Stomach and intestines slightly discolored, but otherwise normal. Liver congested; weight, 1,850 grams. Pancreas weighed 70 grams. Kidneys: Line of demarcation between cortical and medullary substance normal. Capsule easily peeled. Left kidney weighed 215 grams; right, 190 grams. Pelves and ureters normal. Urinary bladder greatly distended with urine. Spleen lobulated and rather hard in substance; weighed 220 grams. Calvarium normal except bone rather thinner than usual. Slight traces of tubercle in membranes at base of brain. Pia mater and arachnoid contained tubercle. Ventricles, especially the lateral, distended with fluid. Brain substance normal and rather larger than usual; weight, 1,410 grams.

MILIARY TUBERCULOSIS.

CASE 1.

M. W.; aged 28 years; nativity, Louisiana; admitted to the United States Marine Hospital, New Orleans, La., March 13; died April 4, 1894.

History.—On admission patient complained of pain in left side of chest, shortness of breath, troublesome cough, and headache. He had been admitted to hospital February 27, 1894, with acute pleurisy, and was treated for the same until March 12, 1894, when he was discharged recovered, and readmitted next day for treatment for tubercle of lung.

Necropsy (five hours after death).—Rigor mortis well marked; body that of a poorly nourished young negro, greatly emaciated. Heart weighed 275 grams, pale and flabby; left ventricle contained fibrin clot; all of the valves were found competent. Trachea and bronchi were greatly inflamed. Left lung weighed 560 grams, studded with small tubercular deposits. Pleural cavity normal. Right lung weighed 1,880 grams; tubercular masses and cavities throughout. Pleural cavity obliterated by old adhesions. Peritoneum studded with large caseous, tubercular masses. Small intestine studded with tubercular masses; large intestine congested and contains tubercular deposits. Rectum slighly congested. Liver normal; weight, 1,700 grams. Gall bladder and ducts distended with bile. Kidneys: Each weighed 160 grams and both were pale and flabby. Spleen weighed 355 grams, studded with tubercles and congested.

CASE 2.

H. C. (colored); aged 23 years; nativity, Tennessee; admitted to the United States Marine Hospital, Memphis, Tenn., January 20; died April 8, 1894.

History.—On admission to the hospital the patient gave a history of having been sick about a week, his symptoms being fever, pains in limbs and body, a moderate cough, and looseness of the bowels. His mental state was very dull, but he did not appear to have the frontal headache of enteric fever. He had considerable bronchitis.

There was tenderness in the region of the liver. His tongue was red and coated. A false diagnosis of typho-malarial fever was made. After five weeks of fever the temperature remained at normal, and the patient appeared to be recovering. In another week there was a return of fever, which continued irregularly, sometimes subsiding in the morning and returning in the afternoon, until a few days before death, when fever was again absent. There were sweats with the fever, but no chills. In the last three weeks of life chest symptoms similar to those of pleurisy and lobular pneumonia developed, and breathing became very difficult at the last.

Necropsy (*seven and one-quarter hours after death*).—Rigor mortis was present in moderate degree. The general nourishment was poor. Pupils dilated. The heart weighed 305 grams. The pericardial sac was distended with serum. Large patches of partly organized deposit were attached to the heart, but there were no adhesions of the pericardium. The valves were all competent and the ventricular walls were of normal thickness. The left lung weighed 841 grams. Its pleural cavity contained a large quantity of yellow serum, separating the lower lobe from the chest wall, while about the upper lobe were newly formed adhesions. Tubercles were present in the upper lobe in considerable number, and the lung showed a tendency to hepatization of lobular patches. The right lung weighed 1,147 grams. Its pleural cavity was obliterated by strong adhesions, as were also the divisions between the lobes. The lung was extensively affected with tuberculosis, the patches varying in size from single tubercles to large solid lumps, all being in a recent stage of growth. The mucous membrane of the ileum and of the descending colon were examined. Scattered deposits of tubercle of nearly the size of a pea were found in the ileum, and some of these had begun to ulcerate. Some ecchymotic patches were found in the large intestine, but no certain indications of inflammation. The right lobe of the liver was adherent to the diaphragm in a small area next to the coronary ligament. The tissue of the entire organ was specked with tubercular deposits of the size of a pin's head and a little larger. It weighed 2,460 grams. The left kidney weighed 236 grams. It contained solid tubercular deposits of large size, and the natural markings of the tissue were much obliterated. The right kidney weighed 184 grams. It was congested and contained tubercular deposits, but, unlike the other kidney, its tissue was naturally marked. The spleen was enlarged, weighing 645 grams. It contained a number of large tubercular patches. Enlarged, cheesy lymph glands were found in the mediastinum, and the mesenteric glands were enlarged. Other organs were not examined.

CASE 3.

Influenza.

J. Q.; aged 34 years; nativity, Ohio; admitted to the United States Marine Hospital, Chicago, Ill., May 15; died September 4, 1893.

History.—Came into hospital suffering from influenza, from which he improved, but the tubercular disease began to make headway, and from it he died.

Necropsy (*eight hours after death*).—Rigor mortis poorly marked; body emaciated. Heart normal; weight, 280 grams. Left lung weighed 1,020 grams, filled with tubercles; the whole upper lobe was occupied by a tubercular cavity. Right lung weighed 1080 grams; tubercular, and had dense old pleuritic adhesions. Tubercular deposits were scattered throughout the intestines and mesentery. Liver congested; color dark; weighed 1,650 grams. Kidneys: Left weighed 180 grams; right, 180 grams; both contained tubercles. Spleen weighed 240 grams; tubercular. Brain weighed 1,320 grams. Brain tissue œdematous, and contained tubercular deposits. Other organs not examined.

ABSCESS OF BRAIN.

CASE 1.

E. W.; aged 43 years; nativity, United States; admitted to marine ward, St. Mary's Hospital, Milwaukee, Wis., June 5; died June 26, 1894.

History.—About nine years ago was struck on the head by a ship's yard and was unconscious for three days; suffered from various cerebral symptoms and was ultimately completely disabled. Two years ago he was operated on in England for abscess of brain and cured, and remained in fair health till May 29, 1894, when he received a severe blow at the spot which had previously been trephined. He was then unconscious for about three-quarters of an hour; was numb all over; vomited and had headache, which continued up to the date of his admission to hospital here. On admission he had headache, dizziness, paralysis of the last three fingers of the left hand, with numbness and loss of sensation in left forearm and hand; difficulty in articulation, with partial loss of sight in left eye. These symptoms continued after his admission and grew worse, and he had also epileptiform convulsions, commencing at about 1 p. m. and ending at 1 or 2 a. m. every day; his pulse varied from 80 to 100; no rise of temperature. Diagnosis made was abscess of brain. June 13, 1894, an incision was made at the point which had formerly been trephined, through the scalp and dura mater, and search was made for pus in the brain with an exploring needle, but none was found. He was trephined at two other points, but no pus found. There was no marked improvement after the operation, but the convulsions ceased. He was most of the time wildly delirious, and died June 26, 1894.

Necropsy (twenty-seven hours after death).—Rigor mortis not marked; skin very yellow and livid. On removing the scalp, dark, sanious fluid exuded; pia mater yellow. In left frontal lobe of cerebrum there was a softened and yellow discolored area extending from the first convolution above to the third below, and antero-posteriorly from the middle of frontal convolution to the anterior central convolution, including the latter. In the center of this softened and discolored area, about the first part of second frontal convolution, was a recent blood clot, in the middle of the arm area. There was a small abscess, about the size of an almond, lying half an inch below the cortex. The lesion of the first operation is marked by a disintegrated mass, occupying an area about as large as a silver dollar. As cause of death was evidently the lesions of the brain, no examination was made of the rest of the body.

CASE 2.

T. H.; aged 60 years; nativity, Ireland; admitted to the United States Marine Hospital, Portland, Me., June 27; died June 29, 1894.

History.—The patient, who had been treated at the United States Marine Hospital, Chelsea, Mass., from February 23 to March 12, 1894, suffering from acute synovitis, from which he recovered, was admitted in an unconscious condition, and remained so until his death. As a consequence, no history of the case could be obtained, as he was brought to this port by a transfer steamer, which took him off a vessel. He had been visited during the morning by a local physician at Booth Bay, who prescribed a mixture of rhubarb and soda for a diarrhœa of which he complained. He was then conscious, walked about unaided, but during the voyage to Portland he became gradually unconscious.

Clinical history.—Upon inquiry of the ambulance driver about the condition in which the patient was found, he reported that the man was suffering from meningitis, a diagnosis made by someone who happened to guess near the truth. His temperature was 39.4° C., breathing rapid and shallow; mental condition one of partial receptivity; pupils about normal and evenly dilated. He was restless, rolling from side to side, and persisted in rubbing the toes of both feet with his hands every few minutes. It was found impossible to give medicine by the mouth, and a hypodermatic injection of morphia was given and cold applications made to head. Patient rested about three hours during night. Control over sphincters was retained, and catheterization was performed in the morning and urine withdrawn. Symptoms remained about the same. He would not respond to questions, but could articulate voluntarily. Strychniæ was administered hypodermatically. No improvement of symptoms followed the line of treatment adopted, and the patient gradually sank, dying at 11.55 p. m., about twenty-eight hours after admission.

Necropsy (*thirteen hours after death*).—A complete examination of the body was made, but especial attention was devoted to the brain and cranial cavity. Rigor mortis was well marked, and lividity of skin was present on neck and under surface of body. The right pupil was small; the left half dilated. The body was well nourished, and a uniform layer of fat was present, as well as a large quantity in the omentum. The heart weighed 360 grams. The left ventricle was hypertrophied, the wall thickened; the right was dilated and the wall thin. The aortic and mitral valves were incompetent; the pulmonary and tricuspid valves were competent. The lungs were normal; no pleuritic adhesions, but a condition of passive congestion of each was noted. The right weighed 570 grams; the left, 530 grams. Peritoneum was normal; no adhesions. The liver was of a nutmeg color and appearance, weighing 1,600 grams. The gall bladder was distended with bile. The kidneys were normal; each weighed 200 grams and each had a slightly adherent capsule. The spleen was small, weighing only 95 grams. Brain: The cerebellum weighed 180 grams, the cerebrum 1,250 grams, and the evidence of a diseased condition was immediately apparent upon its removal from the cranial cavity. Along the track of the veins of the dura mater lines of pus were seen, a condition that was later observed in the sulci of the convolutions. Pus was found in the fourth ventricle in the greatest quantity, perhaps 3 c. c., and this was traced to the meatus auditorius internus, left side, where a carious condition of the petrous portion of the temporal bone was found. This broke down at once upon pressure into the auditory canal a portion about as large as a pea being easily scooped out, showing pus in the cancellous structure. This portion of the temporal bone was sawed out to include the mastoid process, and extension of the pus was found in this latter cellular structure. No evidence of external discharge was found.

Remarks.—This is another case of inward extension of mastoid disease, probably, although it may have begun with disease of the internal ear. The destructive process took the course of the petrous portion of the temporal as its method of exit for the products of suppuration, and the presence of pus on the base of the brain, in the fourth ventricle, resulted in destruction of vital functions from pressure.

SOFTENING OF BRAIN.

P. P.; aged 52 years; nativity, Sweden; admitted to the United States Marine Hospital, Boston, Mass., April 8, 1892, suffering from dementia. In September, 1893, lost power of coordination, and unable to walk; also lost control of sphincters. In October, 1893, lost power of speech. May 18, 1894, at 1 p. m., was taken with violent trembling, stertorous breathing, right pupil dilated, left normal, tonic contraction right arm. Died May 19, 1894, at 6.50 p. m.

Necropsy (*thirty-nine hours after death*).—Post-mortem lividity on back and neck. Rigor mortis marked. General nourishment excellent. Both pupils contracted. Heart small and contracted, its valves pale and flabby; weight, 280 grams. Hypostatic pneumonia in posterior part of both lungs. Weight of left lung, 700 grams; right lung weighed 705 grams. Pleura not adherent. Intestines distended by gas. Stomach dilated, reaching almost to pelvis. Pyloric orifice not lessened in diameter. Post-mortem discoloration of liver very considerable; weight, 1,400 grams. Gall bladder and ducts normal. Kidneys apparently normal; left weighed 105 grams; right, 120. Urinary bladder empty. Spleen soft and pulpy; weight 80 grams. Skullcap thick. Membranes of brain chronically inflamed and thickened.

Brain weighed 1,265 grams. Ventricles enormously dilated with serum. Areas of softening throughout internal capsule. Point of softening and granular appearance in lower part of cerebellum.

ACUTE MYELITIS—PARAPLEGIA.

W. L.; aged 22 years; nativity, Nova Scotia; admitted to the United States Marine Hospital, Boston, Mass., September 8; died December 5, 1893.

History.—Had been sick for four weeks. Both legs and feet swollen and painful. No history of traumatism nor of venereal disease. Partial loss of motion in both legs. Unable to walk without assistance when he came to the hospital. Had pain in both legs and retention of urine. Upon examination urine was found to be normal. Sound passed and slight stricture found. Total paralysis of both lower extremities soon followed, with loss of power over rectum and bladder. Diarrhœa and cystitis set in.

Necropsy (*twenty-four hours after death*).—Rigor mortis and post-mortem rigidity marked. Emaciation extreme. Bed sores over sacrum and both heels. Heart small; weight, 170 grams. Pericardium thickened; mitral and tricuspid valves were pale, flabby, and thickened. Liver congested; weight, 1,200 grams. Gall bladder full. Kidneys cirrhotic; both pelves dilated; weight of right, 150 grams; of left, 160 grams. Capsules easily detached. Pelvis of left kidney contained a small amount of pus. Bladder contained some pus and was hypertrophied concentrically. Spleen dark, lobulated, and soft; weight, 170 grams. Two supernumerary spleens were found. One weighed 10 grams; the other was about the size of a pea. At about the last dorsal vertebra the cord was broken down entirely for 3.75 cm. in length. Membranes were intact. No tumor of cord. Vertebræ were in normal condition.

CEREBRAL HEMORRHAGE.

CASE 1.

H. J.; aged 44 years; nativity, Greece; admitted to the United States Marine Hospital, San Francisco, Cal., August 5, 1893; died May 19, 1894, at 7.50 o'clock p. m.

History.—On admittance patient said that he had become suddenly paralyzed six months before. He had ataxic aphasia to such a degree that it was difficult to understand his attempts at speaking. Upon using his voluntary muscles, as the arms and legs, they were thrown into a condition of clonic spasm. His locomotion was consequently very jerky and impeded. The clonic spasm of the upper extremity was such that most of the time it was necessary for the nurse to feed him. At times the spasmodic condition improved. Six months before death the patient exhibited insane delusions, generally of a harmless nature. He gradually sank into a condition of mental imbecility. On February 22 patient had a convulsion which resembled a general epileptic seizure, remaining unconscious thereafter for eight hours. On the morning of the 18th of May, 1894, he had another convulsion, followed by complete coma, from which he did not rally.

Necropsy (*fourteen hours after death*).—Post-mortem rigidity and lividity. Body well nourished. The meninges of the spinal cord in the lumbar region were congested. On the left side of the brain a spread-out, thin clot of blood was found between the dura mater and arachnoid membrane. The clot overspread the posterior part of the frontal lobe, all of the parietal, and a part of the occipital and temporo-sphenoidal lobes of the cerebrum. The convolutions of the cerebrum, left side, appeared well developed. The convolutions of the island of Reil, the claustrum, and external capsule were in a state of necrotic softening. The nuclei caudatus and lenticularis of the striate body and the anterior limb and knee of the internal capsule presented a bluish appearance and were tough on cutting. The septum lucidum was broken down. The right cerebral hemisphere, on section on a level with the so-called centrum ovale minus presented, besides the usual puncta vasculosa, numerous orifices varying from microscopic size to 10 mm. in diameter. These orifices, which could be seen on the cut surface, from the anterior to the posterior limits, were particularly numerous near the lateral ventricle, and resembled the open mouths of the hepatic veins on section of the liver. On successive deeper sections of the cerebrum the same appearance was presented, except that the orifices were larger and less numerous, the lesser channels coalescing to form larger ones. They could be traced directly into the lateral ventricle. They were possibly produced by inflammatory condition of the vessels, or from pressure caused by hypersecretion of cerebro-spinal fluid in the ventricle. The examination of the brain, which had been preserved in alcohol, was made seven weeks after death.

CASE 2.

J. B. (colored); aged 27 years; nativity, West Indies; admitted to the United States Marine Hospital, Baltimore, Md., September 21; died September 27, 1893.

History.—Father died suddenly, but patient did not know cause. Gave history of having had two sores on penis about two years before. On both legs, running down the median line, were scars, apparently the remains of syphilitic sores. He said he had been having cramps in arms, hands, legs, and feet for the past two years, off and on; they came on when occupying one position for a great length of time, and especially during damp and cold weather; they lasted from fifteen to thirty minutes. He slept in an apartment next to ice, with which his boat was loaded, and the door open. He caught a cold from this, and his face, ankles, and prepuce became very œdematous. The abdominal cavity was also distended with fluid. Urine contained about 50 per cent of albumen. Pulse was slow. During the evening of September 21 was given a dose of salts, which acted on bowels. September 22, felt better; gave mistura ferri et ammonii acetatis. September 23, during night, went to stool three times and twice passed a great deal of blood. During the day of September 24 had three stools and each time passed blood; was given an enema of starch water and laudanum. September 25, cream of tartar and lemonade was given. September 26, urine contained a great deal of albumen; sp. gr., 1.008; light in color. The œdema of prepuce and legs had disappeared to a great extent, but the œdema of face remained about same. September 27, at 9.15 a. m., he complained of feeling heavy; he firmly flexed his arms and in a few minutes was unconscious; legs and arms became rigidly extended; respiration was of a whistling character, and later quite labored. He frothed considerably at the mouth; temperature rose to 41° C.; pulse, 136. About an hour later pulse was 155 per minute. During this time there was a tendency to hemorrhage from mouth and nose. He remained in this condition until 4 o'clock p. m., when he died.

Necropsy (*fourteen hours after death*).—The tissues very œdematous. Rigor mortis well marked. Body was well nourished. When making an incision through the scalp a large quantity of dark blood ran out. When skullcap was removed a large quantity also ran from the cavity. The brain looked normal until cutting into the left lateral ventricle, where was found a very large clot (about the size of a hen's egg). After the removal of the clot it was noticed that the adjacent tissue was stained and studded with extravasations of blood about the size of a pin's head; the rest of the brain substance was apparently normal. The left ventricle of the heart was hypertrophied, the auricular appendix very large and prominent. The liver was enlarged and bled easily on section; the posterior surface was mottled. The kidneys were enlarged, capsules more or less adherent, and when removed left a rough surface; they were dark purplish in color and dotted here and there with spots of ecchymosis; the cortical portion was increased in thickness and the pyramids were engorged with blood. The transverse and descending colon were very much contracted. The chest and abdominal cavities were partially filled with fluid. The stomach and intestines were very much distended with gas, and portions of small intestines were congested.

VALVULAR DISEASE OF HEART.

CASE 1.

Mitral—Cirrhosis of liver and kidneys.

H. J.; aged 40 years; nativity, Nova Scotia; was admitted to the United States Marine Hospital April 28, 1894, suffering from dropsy of lower extremities and abdomen, with shortness of breath; died June 18, 1894.

History.—He had been serving on the schooner *Hustler.* Examination of urine showed some albumen. Diagnosis was made of chronic Bright's disease, but it was noted that there was also regurgitation and stenosis at the mitral valve. Dropsy was relieved to some extent by hydrogogue cathartics and diuretics, but patient continued to grow worse and weaker until he died.

Necropsy (*twenty-four hours after death*).—Body was of medium size and greatly emaciated. Abdomen was greatly distended. Right leg showed a solution of continuity of the skin for a space of 10 by 15 cm. Rectum everted. Post-mortem lividity marked on all dependent parts. Rigor mortis had almost entirely disappeared. The heart weighed 445 grams, and was hypertrophied and dilated, the pericardial sac distended with fluid. The left ventricle was much enlarged and its wall thickened; the right ventricle also enlarged and distended with blood. The mitral orifice was calcified and stenosed and of irregular shape, measuring in one direction 16 mm. and in another, at right angles to this, 22 mm. The valves were entirely obliterated. The surface of the orifice was roughened by the calcareous deposit, like a ring of bone. The left lung weighed 650 grams; the right, 810 grams. Both were exceedingly œdematous. The pleura was thickened and firmly attached, especially at the lower portion. The abdominal cavity was distended with a straw-colored fluid to a considerable extent; the intestines inflated with gas, and adherent to the peritoneum in a number of places. The peritoneum was thickened; the omentum discolored a dirty gray. The stomach was distended with gas, the mucous membrane greatly thickened and showing a number of petechiæ; the vessels considerably enlarged. The liver was hard and cirrhotic, and showed a very characteristic nutmeg marking. The capsule was very much thickened. The weight was 1,360 grams. The gall bladder was diminished in size, and contained very little bile. The kidneys were both lobulated and cirrhotic, being very hard and tough. The capsule was adherent. The left weighed 160 grams; the right, 170 grams. The spleen weighed 125 grams, and showed the nutmeg marking. The primary lesion in this case must have been the disease of the mitral valves, consisting of regurgitation and stenosis. The condition of the kidneys and liver was secondary to this affection.

CASE 2.

Mitral—Hydropericardium.

T. D.; aged 42 years; nativity, New York; admitted to the United States Marine Hospital, San Francisco, Cal., January 15; died at 12.10 p. m. January 16, 1894.

History.—Patient on admittance complained of dyspnœa, general weakness, dry cough, loss of appetite, and inability to sleep. He had been unwell for years. For the past three months he had had frequent attacks of dyspnœa. Physical examination revealed marked cyanosis and coldness of extremities. The heart was found to be enlarged to the right, and the apex beat displaced downward one interspace. The sounds were feeble. There were also marked evidences of fluid in pericardial sac. The pulse was rapid (120), feeble, and thready. The respiration was rapid (about 40), but could not be counted with certainty owing to the frequency of the cough. Marked crepitations were heard over both lungs. In spite of immediate treatment, the patient rapidly declined; passed a restless night; became unconscious at daybreak, and died at 12.10 p. m. January 16, 1894.

Necropsy.—Rigor mortis and post-mortem lividity well marked. Nearly the entire parietal layer of pericardium was adherent to the pleura, and was rough and much thickened. The pericardial sac contained about 200 c. c. of serous fluid. The heart weighed 460 grams, and presented a red, beefy appearance. It contained a large quantity of venous blood. The right heart was dilated and its walls were very thin. The left ventricle was hypertrophied, its walls being an inch thick. The arch of the aorta was found to be healthy. The valves were normal, with the exception of the mitral, one segment of which was bound down by a contraction of the musculi papillares. The right pleura was strongly adherent to the diaphragm, and lung in a state of hypostatic congestion. The left lung was compressed, presented a number of emphysematous projections, chiefly at the apex, and showed many depressions due to collapsed lung tissue. The lower lobe was also in a state of hypostatic congestion. Both lungs floated in water. The stomach was large and its mucous coat congested. The walls were thickened and displayed a number of ulcerated patches. Liver, spleen, and kidneys normal.

CASE 3.

Mitral.

L. W.; aged 50 years; nativity, New York; admitted to the United States Marine Hospital, Chicago, Ill., May 13; died November 15, 1893.

History.—In August, 1892, he first began to suffer with shortness of breath, which grew steadily worse, and when admitted to hospital breathing was extremly difficult. The feet and legs became œdematous; the œdema seemed to appear and disappear at long intervals. This slowly grew worse until it extended above the knees; small ulcers formed here and there on the skin of the legs and feet. Examination of heart proved the existence of mitral and aortic insufficiency, with a compensatory hypertrophy, and subsequent dilatation. The dyspnœa became steadily worse owing to œdema of the lungs. Under treatment, however, he became much improved; the œdema lessened and the heart's action became better. The improvement was only temporary, as he slowly grew weaker as the disease advanced.

Necropsy (six hours after death.)—Post-mortem lividity slight; rigor mortis, none. Pupils dilated. General nourishment fair. The heart weighed 930 grams. The pericardial sac was distended with fluid; quantity not measured. The aorta and mitral valves were both incompetent. The left heart was greatly hypertrophied. The pleural cavity contained a large effusion. The lungs were both congested and œdematous. There were also pleuritic adhesions to chest wall. The left lung weighed 460 grams; the right, 580 grams. There was an incarcerated right inguinal hernia, which had been operated on some months before while in this hospital, and relapsed. The liver weighed 2,150 grams. Gall bladder and ducts were distended with bile. The kidneys showed traces of a chronic interstitial nephritis. Other organs not examined.

CASE 4.

Mitral and tricuspid.

D. J. (colored); aged 71 years; nativity, Ohio; admitted to the United States Marine Hospital Memphis, Tenn., June 22, 1892; died July 22, 1893.

History.—This patient was pretty well broken down when admitted to the hospital, the effect of vicious habits and disease. He gave a history of having contracted syphilis twelve years before, and had been a hard drinker. He was suffering severely from the effects of both valvular disease of the heart and chronic pleurisy of the left side. Under good care and medication he became much more comfortable, and his life was prolonged more than a year. The symptoms of pleurisy nearly subsided, and death was caused by the disease of the heart. Besides the congestive symptoms of the heart disease, he suffered a great deal from digestive disturbances, with alternating diarrhœa and constipation.

Necropsy (*five hours after death*).—No post-mortem lividity. Rigor mortis absent. General nourishment poor. Pupils moderately dilated. Anasarca was present in the lower portion of the body from the waist down, and in the arms and hands. The heart weighed 374 grams. The pericardial sac was filled with serum. The aortic and pulmonary valves were competent. The mitral and tricuspid valves were incompetent. The anterior cusp of the mitral valve was large and thick. The posterior cusp was reduced to a narrow strip on the border of the opening, and its free border had the appearance of ulceration. The borders of the cusps of the tricuspid valve were thickened and rough, and affected with what appeared to be recent inflammation and small vegetations of recent formation. The left ventricle was much hypertrophied. Both pleural cavities were obliterated by very firm adhesions. The lungs were not removed. They were congested and œdematous. The liver was of a lighter color than normal. It was the nutmeg liver, with apparently considerable fatty degeneration. It weighed 1,626 grams. The gall bladder contained very dark, viscid bile and about a dozen gallstones of various sizes. The left kidney weighed 165 grams; the right, 161 grams. The parenchyma of the kidneys was very pale in color, affected apparently with fatty degeneration. The spleen weighed 291 grams; its malpighian bodies were enlarged and nodular in feel. The other organs were not examined.

CASE 5.

Mitral and aortic.

R. C. (colored seaman); admitted to the United States Marine Hospital, Cincinnati, Ohio, February 1, 1893, for rheumatism.

History.—He had some dullness over both lungs; dyspnœa; œdema of lower extremities; albumen in urine; cardiac hypertrophy and a systolic apex murmur. After two months' treatment his condition improved, and he was discharged April 3, 1893. Was readmitted to hospital May 22, 1893, suffering from same trouble, except symptoms were all more marked. Dyspnœa, palpitation, and cardiac distress were greater; ascites, œdema of extremities, and albumen were present, together with digestive trouble. Rheumatism better. Under the use of digitalis and purgatives his general condition improved and he had periods of comparative comfort. On the morning of the day of his death he complained of severe headache and pain in his neck and back, and grew apathetic; had muscular spasm and gradually became unconscious, the onset of the latter symptom being accompanied by the appearance of clonic convulsions of the upper extremities, retractions of head, and frothing at the mouth. Patient died December 31, 1893.

Necropsy (*eighteen hours after death*).—Rigor mortis well marked; lividity absent; general nutrition good. Heart: Walls greatly hypertrophied; weight, 550 grams; pericardium thickened and opaque on visceral surface. The sac contained 100 c. c. of thin colored fluid. Mitral valve thickened and incompetent; aortic only slightly thickened; ascending aorta atheromatous and thickened. Lungs were normal excepting slight adhesion at left apex, with a cicatrix. Kidneys presented appearance of fatty degeneration. Death due to uræmic poisoning.

CASE 6.

Mitral and aortic. Odema of lungs.

J. L.; aged 22 years; nativity, Virginia; admitted to marine ward, German Hospital, Philadelphia, January 24, 1894, suffering from an irritable cough and attacks of pain over right chest. His temperature was 38.4° C., which varied very little until his death.

History.—He gave history of having contracted syphilis several years ago. Gave no history of rheumatism. The patient complained of some dyspnœa, but had no pain over the heart. On physical examination there was found a slight bronchitis and a loud double murmur was heard over the heart, which was diagnosed to be aortic and mitral regurgitation. The heart was considerably enlarged. The treatment consisted of carbonate of ammonia, cough mixture, and infusion of digitalis. The patient rested quietly on the evening of January 29 and seemed in good condition. On the morning of January 30 he had a severe attack of coughing and expectorated a large quantity of mucus, mixed with blood; respirations became very rapid, 90 to the minute; the pulse was strong and of high tension. The lungs began to fill rapidly. The patient was cupped over right and left chest and stimulants were administered, but in spite of treatment he died about four hours after the attack of coughing.

Necropsy.—Rigor mortis was well marked. Very dense adhesions were found over both lungs. Lungs were very œdematous, but otherwise normal. Heart was very much enlarged; the pericardium very adherent and could not be separated from the heart. The right side of the heart was very much hypertrophied; the left side was dilated. At the base of the aortic valve a vegetative endocarditis was beautifully marked, the valve being almost entirely destroyed. The mitral valve was incompetent. The liver was enlarged and fatty. The spleen was also enlarged and soft. The kidneys were very much congested, but no evidence of any other lesions were found. The patient evidently died from œdema of the lungs, brought about by an attack of acute endocarditis.

CASE 7.

Mitral and aortic.

F. S.; aged 30 years; nativity, New York; admitted to the United States Marine Hospital, Chicago, Ill., September 5; died September 29, 1893.

History.—When admitted was suffering with extensive œdema of lower limbs, dyspnœa, etc. Valvular incompetency of mitral was discovered on examination. Œdema became worse and jaundice developed as the disease progressed. Although he seemed to improve under treatment, he died suddenly, September 29, 1893.

Necropsy (nine hours after death).—Post-mortem lividity absent. Rigor mortis slight. General nourishment good. Pupils dilated. Weight of heart, 490 grams. Aortic valves incompetent and covered with vegetations. The mitral valve was also incompetent. The left ventricle was dilated somewhat and its wall hypertrophied. The pericardium contained an abnormal amount of fluid. The lungs were congested and the pleural cavity contained fluid. Anterior border of right lung contained a small infarction 4 cm. in diameter. Left lung weighed 580 grams; right, 630 grams. The liver was congested, fatty, and discolored with bile of a yellow-red color and weighed 2,035 grams. Gall bladder and ducts filled with bile. The kidneys were congested and the uriniferous tubules were plainly visible. The right and left kidney each weighed 180 grams. The spleen weighed 200 grams. There was extensive œdema of feet and legs.

CASE 8.

Mitral and aortic—Aortic aneurism—Rupture.

P. S.; aged 57 years; nativity, Germany; admitted to the United States Marine Hospital, San Francisco, Cal., November 24; died November 28, 1893, at 5.15 o'clock a. m.

History.—On admittance stated that he was suffering from a severe cold and had been ill two months. He had cough, dyspnœa, and dropsy of lower extremities. Sleeps but little and had to sit up all the time. Had been healthy all his life with the exception of an attack of rheumatism one year ago. Physical examination showed some hypertrophy of heart; systolic mitral murmur present. Feet, legs, and thighs are œdematous.

Necropsy (eight hours after death).—Lower extremities very œdematous; no discoloration of body; rigor mortis not well marked. Heart: Pericardial sac filled with bloody serum; heart hypertrophied; mitral valve incompetent; slight incompetence of aortic valve; an aneurism (sacculated) found springing from transverse portion of arch of aorta, about 3 inches in diameter and filled with laminated fibrin. The aneurism was adherent to the edges of both lungs. A small rupture was found on posterior surface of aneurism. Pleural cavities of lungs filled with serum and blood. Lungs were congested; otherwise normal. Liver was congested; also spleen. Kidneys deeply congested.

CASE 9.

Ulceration of aortic valve—Lobar pneumonia.

J. B. (colored); aged 37 years; nativity, Kentucky; admitted to the United States Marine Hospital, Memphis, Tenn., March 8; died March 22, 1894.

History.—The patient's symptoms through the course of his fatal illness were varied and obscure, and it seems impossible to lay them to a single cause. He had fever, which was thought at first to be malarial, but which took a very irregular course, sometimes appearing to be hectic, and rose to 41° C. just before death. He had, on admission, great tenderness in the hepatic region, slight enlargement of the liver, slight icterus, moderately severe bronchitis, and a systolic heart murmur, heard over the aortic valve, and denoting obstruction. He had been sick about six days, having been seized with a chill after undergoing heavy labor and exposure. Pneumonia in the upper lobe of the right lung developed while the patient was in the hospital. At one time it was thought that there might be abscess of the liver, and an exploration was made, but without result.

Necropsy (eight and one-half hours after death).—No post-mortem lividity; rigor mortis present; general nourishment good; pupils slightly dilated. The heart weighed 390 grams. The pericardium was slightly injected along the left border of the heart. The valves, except the aortic, were competent. The aortic valve was inflamed and ulcerated. There were large vegetations upon the cusps, and two of them were perforated through the center, and at the base of the third the endocardium was ulcerated. No evidence of endocarditis was discovered elsewhere. The wall of the left ventricle was much hypertrophied. The left lung weighed 469 grams; its pleural cavity was normal. It was hypostatically congested in the lower lobe. The right lung weighed 950 grams. It was extensively adherent to the chest wall, but could be separated therefrom without tearing. The upper lobe was in a condition of gray hepatization; the middle one was normal; the lower one was congested. In the abdominal cavity there was localized peritonitis over nearly the whole of the upper surface of the liver, or, rather, there were firm adhesions there, the result of perihepatitis. This inflammation must have centered at about the place of passage of the vena cava, as a patch of the diaphragm and a coil of intestine at this place could not be separated from the liver, so firmly were they attached. The mucous membrane of the lower part of the ileum was examined, and Peyer's patches were found to be healthy. The mucous membrane of the descending colon was also examined, and no ulcers nor evidences of inflammation were found. The liver was very large, but was natural in color; it was unusually firm in consistence; it weighed 2,210 grams. The pancreas weighed 158 grams and was of very firm consistence, though normal in appearance. The left kidney weighed 197 grams; the right, 198 grams. Both were normal in appearance. The spleen weighed 445 grams, being about double the normal size; its tissue was very dark in color. A supernumerary spleen was found in the belly of the size and shape of a marble and of 1.5 grams weight. It was attached by loose tissue to the tail of the pancreas, beneath the peritoneum and entirely separate from the main spleen.

CASE 10.

Rupture.

J. C.; aged 42 years; nativity, Massachusetts; admitted to the United States Marine Hospital, Boston, Mass., April 25, 1894, suffering from cough, dyspnœa, œdema of feet and legs, and general anemia. Had been treated in this hospital on previous occasions for tubercle of lungs. On nights of April 28 and 29 he complained of asthma and was given morphine. On afternoon of the 30th, while lying in bed, he suddenly fell over side of bed, striking the floor. He then got up himself and lay on bed again. When seen a few minutes later he was struggling for breath; head thrown back; froth issuing from mouth and nose; face pale; muscles of chest fixed and hard, the thorax not moving at all during respiration. Heart sounds could not be heard; pulse at wrist could be felt, but was not strong. No pulse at all in temporals. Right jugular pulsating strongly; left not at all. Pupils normal. Died about thirty minutes later.

Necropsy (*sixteen hours after death*).—Body of white male; pale and emaciated. Post-mortem lividity marked in dependent parts. Rigor mortis marked; no cicatrices. Larynx and trachea congested. On opening thoracic cavity the pericardium bulged into the open space. This cavity was found to contain a large quantity of dark fluid blood, distending sac to its utmost capacity. Heart was covered with a layer of fat about one-half inch thick. The organ itself was very much hypertrophied and its cavities enlarged. Substance of heart infiltrated with fat and exceedingly friable. Mitral valve hard and unyielding; stenosis of orifice. Tricuspid valves incompetent; other valves normal. In the anterior wall of left ventricle, near septum, was a tear about 4 or 5 cm. in length, running vertically and extending into cavity, but larger outside than inside, this rupture of heart causing death. Weight of heart, 680 grams. Lungs slightly tubercular. Weight of right, 1,000 grams; of left, 770 grams; both congested. Kidneys granular and tubercular; weight of right, 175 grams; of left, 170 grams. Liver congested; weight, 1,750 grams. Spleen weighed 120 grams. Cerebral membranes congested slightly. Weight of brain, 1,250 grams.

ANEURISM OF THE THORACIC AORTA.

CASE 1.

E. W. A. (colored); aged 35 years; nativity, Jamaica; admitted to the United States Marine Hospital, San Francisco, Cal., February 17; died June 21, 1894, at 10.45 p. m.

History.—On admittance patient complained of vague pains in the chest, cough, loss of appetite, and occasional vomiting. At first nothing distinctive could be made out and he was treated for rheumatism. Subsequently the symptoms changed and various diagnoses were entertained, such as mediastinal tumor, tubercle of lung, pneumonia, and bronchitis. He was discharged improved on April 3. On readmission, May 8, 1894, patient complained of illy defined thoracic pain, attacks of dyspnœa, and gastric disturbances. Examination of chest showed a great variety of rales in various parts, a diffuse pulsation over the manubrium sterni, synchronous with the heart beats, and an indistinct bruit, best heard at the right sterno-clavicular articulation. A diagnosis of aneurism of the arch of the aorta was made at the time, without other physical signs or symptoms. The bruit referred to was systolic and disappeared in a few days. The aortic second sound was accentuated. There was no differences in radial pulse of either side, no difference in pupils, no engorgement of veins of the neck, no unilateral vaso-motor disturbances, nor any evidence of bruit or tumor in the back. Patient soon developed a ringing cough and persistent and uncontrollable attacks of hiccoughs. On May 15 patient described a sensation as of a large lump in region of arch of aorta which he could not cough up. On May 25 the region over the left lung had a flat dullness on percussion. No rise in temperature, no increase in mensuration over the other side. On auscultation the breath sounds were absent; no air entered the lung. Pain, dyspnœa, and hiccough kept up almost unceasingly. On the night of June 21 patient suddenly sprang out of bed and immediately lost consciousness. He was covered with a cold sweat; the pulse became rapid, thready, and soon could not be felt.

Necropsy (twelve hours after death).—Rigor mortis. Body wasted. Heart normal. Right lung sound. Left lung in a condition of atelectasis and sank in water. Bronchus (large) had been occluded by aneurism. On section found a few soft, cheesy spots in upper and middle part of lung. There was an ellipsoidal, saccular-shaped aneurism springing from posterior portion of transverse arch of the aorta. Measurements taken in the transverse and longitudinal axes were 10 cm. by 15 cm. Periosteum was eroded from anterior surface of bodies of third and fourth dorsal vertebræ. The tumor was made up of blood clots in different stages of organization and had ruptured into the œsophagus. The stomach was found distended with arterial blood. The blood when removed was clotted, formed a perfect mold of the stomach, and weighed 960 grams. The splenic capsule was broken by gentle efforts to remove spleen from abdomen. The pulp was pultaceous in consistency and dark in color. Liver slightly enlarged. Kidneys healthy.

CASE 2.

J. R.; aged 50 years; nativity, Massachusetts. Admitted to marine ward, St. Vincent's Hospital, Norfork, Va., March 17; died June 18, 1894.

History.—Patient suffered with severe pain in shoulder and back, dyspnœa, and was very anæmic. The pulse in the left arm was much smaller than that in the right. Percussion revealed dullness on the left side, but at no time could any murmur be recognized. There was no pulsation or thrill.

Necropsy (eleven hours after death).—Body fairly nourished; post-mortem lividity marked; rigor mortis slight. Lungs normal. Heart was hypertrophied. The ascending portion of the arch of aorta was much dilated. An aneurism 8 cm. in diameter was found involving the transverse and descending portions of the arch. It was partially filled with layers of fibrin, and had caused erosion of the fourth and fifth dorsal vertebræ. The abdominal viscera were normal.

CASE 3.

W. B. (colored seaman); admitted to the United States Marine Hospital, Cincinnati, Ohio, July 1, for thoracic aneurism. Went out on the 6th and returned on the 14th, much worse. Tumor larger; pulsation stronger and more noticeable; no bruit. From time of last admission to time of death symptoms grew progressively worse; pain more marked; dyspnœa increased and phonation interfered with. Death occurred suddenly October 27, 1893, at 8 p. m.

Necropsy (twelve hours after death).—Height, 5 feet 6 inches. Rigor mortis and lividity marked; general nutrition good. Pupils dilated. Large cicatrix from burn on right forearm, extending from elbow to dorsum of hand and causing contraction of middle, ring, and little fingers. There was a large oval swelling on the left side of chest anteriorly, extending from first to sixth rib and laterally 1 inch to the right of sternum. Covering of tumor thin. On opening thorax found absorption of parts of second, third, fourth, fifth, and sixth ribs and part of sternum from pressure. Sac of aneurism composed of entire transverse arch of aorta and filled with coagula and fibrin. Ascending arch of aorta was atheromatous. Weight of heart after opening, 448 grams; pericardial fluid slightly increased; no adhesions; valves normal, except aortic, which was in a condition of relative insufficiency. Anterior mediastinum filled with blood. Pleura adherent on left side, with increase of fluid on both sides. Both lungs were œdematous and compressed. Other viscera not examined. Death from internal hemorrhage. Iodide of potassium was administered in large doses, and rest in the recumbent position was tried without marked improvement.

CASE 4.

J. S.; aged 40 years; nativity, United States; admitted to marine ward, Sisters of Charity Hospital, Buffalo, N. Y., March 30; died May 1, 1894.

He applied for relief on account of shortness of breath and fainting spells. Auscultation revealed a harsh systolic murmur in mitral area. He had severe attacks of pain over cardiac region.

Necropsy (seven hours after death.)—Lungs and pleuræ normal, excepting two small adhesions on right side. There was an aneurismal sac projecting into right auricle, having its origin in one of the sinuses of Valsalva. Excepting an enlargement of right auricle, the aneurism did not affect the external appearance of the heart. The aneurism occluded the orifice of right coronary artery by the laminated blood clot formed in the sac. The aortic valves were competent by the hydrostatic test. Pulmonary and tricuspid valves normal. Mitral orifice constricted, not admitting two fingers, and one of the cusps was adherent to contiguous endocardium, presenting complete closure of the valve. Brain normal.

RUPTURE OF A BRANCH OF THE LEFT CORONARY ARTERY.

D. S.; aged 62 years; nativity, New Hampshire; admitted to the United States Marine Hospital, Vineyard Haven, Mass., April 21, 1894.

History.—Patient, while in good health and in the performance of his duties, was suddenly taken with a pain over his heart. He complained of great dyspnœa and soon sank into unconsciousness. On admission to hospital patient was in collapse. Examination showed that the trouble was probably cardiac, as flatness was found on percussion over a large triangular space, as in second stage of pericarditis. Heart sounds were inaudible and a slight heaving impulse was noticeable over body of heart. Patient died suddenly early next morning.

Necropsy (twenty-eight hours after death).—Body large and well nourished; but slight rigor mortis. Brain normal; fluid somewhat excessive. Heart large and fatty; no valvular trouble; pericardium filled with blood, which was found to have come from rupture of a small branch of left coronary artery. Ante-mortem clots found in heart. Lungs congested; otherwise normal. Liver, large and fatty. Kidneys very large and fatty; hemorrhagic spots in cortex. Stomach congested and inner coat much thickened. Intestines normal.

LOBAR PNEUMONIA.

CASE 1.

M. B.; aged 33 years; nativity, Kentucky; admitted to the United States Marine Hospital, New Orleans, La., January 2; died January 6, 1894.

History.—The patient was taken sick December 28, 1893, complaining first of pains in chest, back, and limbs, severe headache, and persistent diarrhœa and vomiting. On physical examination the upper lobe of right lung was found to be consolidated, and later the lower lobe likewise became involved. The cough was slight and the sputum was not tinged with blood. The temperature at no time exceeded 39.6° C.; the pulse ranged from 96 to 115 per minute and the respirations from 30 to 48.

Necropsy (thirteen hours after death).—Body that of a muscular, well-nourished negro man. Rigor mortis marked. The heart contained large ante-mortem clot in right side, left side comparatively empty; cardiac veins much engorged; weight of heart, 300 grams. Lungs: Right normal; weight, 350 grams; upper lobe of left lung in stage of gray hepatization, lower lobe in second stage, and middle lobe œdematous; weight of lung, 1,940 grams. Stomach dilated; capacity 3,700 c. c.; intensely inflamed along the lesser curvature. Small intestine congested in the lower portion of the ileum. Large intestine inflamed in descending colon and sigmoid flexure. Liver normal; weight, 2,080 grams. Kidneys pale in color; weight of right, 220 grams; of left, 230 grams. Spleen normal; weight, 180 grams.

CASE 2.

J. J. M.; aged 24 years; nativity, Mississipppi; admitted to the United States Marine Hospital, New Orleans, La., December 21, 1893; died January 2, 1894.

History.—On admission patient stated he had a severe chill five days before, followed by fever and pain in his right side. When admitted, temperature, 39.6° C.; pulse, 100; respiration, 44; complained of pain in right side; appetite poor; bowels irregular. On percussion dullness was found over middle lobe of right lung, extending to lower lobe of right lung. Cough very annoying; sputum rusty. Vomiting frequently occurred, and at times diarrhœa was quite troublesome. Delirium was frequent at night.

Necropsy (*nine hours after death*).—Rigor mortis well marked. Body that of a fairly well-nourished young negro man. The middle and lower lobes of right lung were in the stage of red hepatization, upper lobe congested. Upper lobe of left lung œdematous, lower lobe congested. Weight of right lung, 1,020 grams; left lung, 780 grams. Both pleuræ were roughened and inflamed, and numerous adhesions were found on both sides. The heart was pale and fatty, and the cavities of both sides were distended with post-mortem clots; no chicken-fat clots were found; weight, 390 grams. The pericardium was congested and contained about 100 c. c. of serous fluid. The liver was slightly enlarged and congested; weight, 2,580 grams. The kidneys were both congested; weight of right kidney, 220 grams; of left, 230 grams. Spleen dark purple in color, intensely congested, very friable; its fractured face was granular in appearance; weight, 420 grams.

CASE 3.

D. A.; aged 34 years; nativity, Sweden; admitted to the United States Marine Hospital, Port Townsend, Wash., May 26; died June 3, 1894.

History.—The patient was slightly delirious when admitted, and gave as a history that he had been perfectly well until three days previous to admission into hospital, at which time he was taken suddenly sick with a chill, followed by profuse perspiration and headache. However, it was subsequently learned from his friends that he had not been perfectly well for two weeks. When admitted he had only a slight rise of temperature, headache, constipation, was exceedingly nervous, and had continuous profuse sweating. A pneumonic spot the size of a dollar was found at the base of lower lobe of the right lung. On the afternoon of the next day the temperature ran up to 39.4° C., but dropped to 36.4° C. the next morning. He grew rapidly worse, the temperature jumping up and down every hour as long as he lived. He was saturated with perspiration all the while. He died eight days after coming into the hospital.

Necropsy (*fourteen hours after death*).—The body was well nourished. Rigor mortis not well marked. The abdomen distended. The heart and left lung were normal, but the lower lobe of the right lung was completely consolidated. The intestines were very much distended with gas. Peyer's patches were ulcerated, and the mucous membrane near them was also ulcerated and sloughing. There was no perforation. The spleen, liver, and kidneys were enlarged and friable.

CASE 4.

S. S.; aged 18 years; nativity, Arkansas; admitted to the United States Marine Hospital, New Orleans, La., December 4; died December 10, 1893.

History.—On November 29 the patient suffered from a violent chill, followed by severe headache, fever, pain over chest, and a troublesome cough. On admission the expectorated matter was found to be tinged with blood, and a physical examination revealed the presence of a lobar pneumonia involving the middle and lower lobes of the right lung. The chest was enveloped in a cotton jacket, and stimulants, stimulating expectorants, and general supportive treatment were employed without avail.

Necropsy (four hours after death).—Body that of a well-nourished, muscular negro lad. Rigor mortis present. The heart was covered with an abundant fibrinous exudation, giving its surface a honeycombed appearance, and its cavities contained very large and firm coagula; weight, 410 grams. Left lung normal; weight, 490 grams. Right lung: Lower and middle lobes consolidated; weight, 1,420 grams; numerous pleuritic adhesions were seen, and a large amount of effusion into the pleural cavities. The liver was mottled in appearance and seemed congested; weight, 2,400 grams. Right kidney normal; weight, 190 grams; left normal; weight, 220 grams. Spleen normal; weight, 330 grams.

CASE 5.

K. H.; aged 39 years; nativity, Louisiana; admitted to the United States Marine Hospital, New Orleans, La., December 7; died December 15, 1893.

History.—On December 3, while working aboard his vessel, he suffered a severe contusion of the right shoulder and chest, and has had severe cough and bloody expectoration ever since. On admission to hospital the upper lobe of right lung was found to be consolidated; expectoration bloody; pain severe; great prostration; pulse, 100; respiration, 36; and temperature, 38.4° C. The usual treatment for lobar pneumonia was employed without avail.

Necropsy (*six hours after death*).—Body that of a muscular, fairly well-nourished negro man. Rigor mortis well marked. Left lung normal; slight pleuritic adhesions. Right lung firmly adherent to chest wall in its upper and middle portions. Upper and middle lobes consolidated, and a small area the size of a hazelnut was gangrenous. Weight of right lung, 1,090 grams; left lung, 510 grams. Heart normal; weight, 290 grams. Liver enlarged, congested; weight, 2,560 grams. Kidneys normal; weight, left 190 grams, right 200 grams. Spleen soft and flabby; weight, 220 grams.

CASE 6.

V. B.; aged 29 years; nativity, Virginia; admitted to the United States Marine Hospital, Boston, Mass., September 23; died September 29, 1893.

History.—He had been suffering from cold for two weeks. Had a chill day before admission. Pain in chest, stomach, and head. Physical examination showed him to be suffering from lobar pneumonia in upper lobe of right side, and slightly on left side. Left lung subsequently cleared up. Patient became aware of his condition on September 25, and thenceforward absolutely refused to take any food or medicine, and occasionally had attacks of delirium so severe that one night he had to be strapped in bed. The only medication that he received after September 25 had to be administered hypodermatically.

Necropsy (*three hours after death*).—Body that of a medium-sized, well-developed colored male; very muscular. No cicatrices. Earrings in lobes of ears. Fouled anchor tattooed on back of left hand. Post-mortem lividity slight. Rigor mortis marked. General nourishment good. Pericardial sac contained about 50 c. c. of fluid. All valves competent. Ante-mortem clot in both ventricles. Clot very firm and adherent to chordæ tendineæ. Heart after opening weighed 265 grams. Ante-mortem clot in thoracic aorta. Pleural cavities entirely free from adhesions. Left lung collapsed and congested, especially posteriorly; weight, 302 grams. Inflammation of second stage of pneumonia; red hepatization in entire upper lobe of right lung; also small infarct. Middle lobe slightly congested, but otherwise quite normal. Hypostatic congestion of lower lobe; weight, 900 grams. Stomach contracted and entirely empty. Liver dark red in color and congested; weight, 1,470 grams. Gall bladder distended. Kidneys slightly congested; otherwise normal; capsule readily detached; weight of left, 150 grams; right, 130 grams. Spleen somewhat enlarged and congested; weight, 260 grams.

CASE 7.

S. L.; aged 55 years; nativity, Louisiana; admitted to the United States Marine Hospital, New Orleans, La., April 19; died April 21, 1894.

History.—For three months previous to admission to hospital the patient had suffered from malarial fever, with occasional night sweats. About April 12 he suffered from a severe chill, followed by pain in left chest, headache, cough, and brownish expectoration. From this time until April 19 he remained at home, receiving little, if any, treatment. On admission to hospital he complained of pain over chest, cough, shortness of breath, and great prostration. On physical examination the left lung was found to be consolidated throughout. Temperature, 39.8° C.; respiration, 56, and pulse, 116.

Necropsy (eight hours after death).—Body that of a muscular middle-aged negro man, fairly well nourished. Rigor mortis extreme. Right lung normal; weight, 380 grams; a few old pleuritic adhesions posteriorly. Left lung consolidated throughout both lobes; numerous recent adhesions over entire surface; weight, 2,320, grams; the lung was extremely friable, and from its fractured surface a quantity of thick fluid, a dirty gray in color, exuded on slight pressure, showing it to be in the stage of purulent infiltration. The heart was pale and fatty; left cavities filled with firm clots; right comparatively free from clots. The pericardial fluid increased to about 150 c. c. The liver appeared normal; weight, 1,520 gram . The gall bladder was entirely empty. Left kidney normal; weight, 260 grams; right kidney normal; weight, 250 grams. Spleen pale and flabby; weight, 210 grams.

CASE 8.

J. J. H.; aged 39 years; nativity, Virginia; admitted to the United States Marine Hospital, Baltimore, Md., January 6; died January 10, 1894.

History.—Was taken sick six days before admittance, and became worse each day afterwards. Had chills every day for three days previous to his entrance. January 6 he complained of sharp pain in left side, which increased during coughing and taking a deep inspiration. Appetite very poor. Bowels very loose—three or four stools daily. Temperature, 40° C.; pulse, 96. January 8, bowels very loose; moved five times during the day; temperature, 39.6° C. January 9, had several passages during night. Coughed a great deal; sputa streaked with blood and purulent in appearance. January 10, temperature, 40° C.; pulse, 134; very weak; respiration 52 per minute, short and quick. Sputa very dark. Died at 10 o'clock.

Necropsy (twelve hours after death).—Rigor mortis marked. Body slightly emaciated. Heart normal; weight, 500 grams; contained an ante-mortem clot. There were extensive adhesions of the left lung, being tightly bound down to parietes and pericardium. The lower portions of each lobe were congested and crepitated on pressure. The upper portion of either lobe contained tubercular deposits. The bronchi were much congested; weight, 1,000 grams. The lobes of the right lung were adherent to each other; weight, 3,000 grams. The upper part of superior lobe crepitated on pressure and floated in water. The middle lobe sank in water and contained a large quantity of purulent matter. The lower lobe sank in water, and the whole of lower part was one large abscess, the remaining upper portion being infiltrated with pus. The parenchyma of lung was very soft and easily torn. The walls of the abscess were ragged and flabby. Liver: Weight, 4,250 grams; had a mottled appearance and areas of fatty degeneration. Kidneys: Weight of each, 192 grams; were enlarged and congested; the line of demarcation between cortical and medullary substances was obliterated; the capsules stripped easily.

CASE 9.

J. M.; aged 46 years; nativity, Ireland; admitted to the United States Marine Hospital, San Francisco, December 13; died December 19, 1893.

History.—Malaise for two weeks previous to admission, with frequent chills, pains in the right side of chest, slight cough, headache, backache, and general weakness.

On second day was found to have lobar pneumonia of right side. December 17, was slightly delirious during the day and night and required constant watching. December 19, grew steadily weaker and died in the afternoon.

Necropsy (*seventeen hours after death*).—Post-mortem lividity and rigor mortis marked. General nourishment good. Pupils dilated. The heart weighed 430 grams. Pericardial sac appeared normal. The right lung was deeply congested and showed pneumonic exudation over entire lower lobe, which was of a cherry-red color. The right lung weighed 1,870 grams; the left, 699 grams, and was slightly congested. A slight inflammation of the pleural surfaces was apparent, but there was no exudate. The liver was greatly and irregularly enlarged, fatty, and of a reddish-brown color; it weighed 2,260 grams. Gall ducts and bladder empty. The kidneys weighed—right, 230 grams; left, 210 grams; both inflamed. The spleen was congested and slightly enlarged; weight, 235 grams.

CASE 10.

Pleurisy, ulcerative endocarditis, and nephritis.

J. W. (colored); aged 49 years; nativity, Jamaica; admitted to the United States Marine Hospital, San Francisco, October 6; died October 25, 1893, at 7 o'clock a. m.

History.—On admission he complained of pain in left side of chest. The pain was very acute and was rendered much worse by taking a deep inspiration. The pain appeared only four days previous to admission. Said he had had gonorrhœa for eighteen months. Complained of a urethral stricture. The only physical sign present was a pleuritic friction sound. Urine was loaded with pus and albumen, and also diminished in quantity. Temperature on admission, 38° C.; for four days following it remained at 39° C., then fell to normal, remaining so until October 20 (nine days). During this period he felt quite well and coughed but little. On October 16 he had a copious diarrhœa, which soon abated. On the morning of October 20 his temperature suddenly rose to 40° C. He had no chill, but had a violent attack of hiccoughs, which continued all day. A physical examination showed increased tactile fremitus, dullness, crepitations, and tubular respiration over left lower lobe. There was also a grazing pleuritic friction sound. There was a friction sound over left border of heart synchronous with the heart's pulsation. His cough became quite violent and he vomited a great deal. On October 23 he complained of pain over right lung. Physical examination showed increased tactile fremitus, dullness, crepitations, and tubular respiration, best marked posteriorly. His heart was laboring. His stomach all the time was very irritable and he could retain no food. He remained about the same until the afternoon of October 24, when he became much worse and continued to decline until the morning of October 25, when death occurred. He was semicomatose for about twelve hours preceding death.

Necropsy (*thirty hours after death*).—Rigor mortis not excessive. Heart was normal in size; walls were engorged and veins much distended; two large patches of fibrinous exudation on wall of right ventricle and one small patch of exudation on wall of left ventricle. No effusion in pericardial sac; small amount of ante-mortem clot adherent to mitral valve; aortic valve competent; large amount of a yellowish-green, semigelatinous material occupied cavities of right ventricle and auricles and extended several inches into pulmonary arteries and inferior vena cava. There was an ulcerative endocarditis on right side of heart, the tricuspid valve being mostly affected. Lungs: Many recent pleuritic adhesions on left side of thorax; none on right side; no effusion. Upper lobe of the left lung crepitant; no crepitation could be elicited over lower lobe. On section the lower lobe appeared in a state of gray hepatization; considerable pus flowed from incised portion. A section sank in water. Crepitation could be elicited in right lung except over middle lobe. Middle lobe presented appearances of a pneumonia in stage of gray hepatization; lower lobe much congested. The pleuræ on both sides were covered with a yellowish-green fibrinous exudate. Liver was congested. Spleen was very small. Kidneys: Left weighed 140 grams; right, 90 grams, both presented appearances of an acute parenchymatous nephritis. Bladder was much contracted and walls thickened, the capacity being about 40 c. c. The walls were about 2 cm. in thickness.

Case 11.

Pericarditis.

J. J. L.; aged 36 years; nativity, Massachusetts; admitted to the United States Marine Hospital, Boston, Mass., May 21, 1894, suffering from lobar pneumonia; died May 23, 6 a. m., forty hours after admission.

Necropsy (*five hours after death.*)—Body muscular. Nutrition excellent. Rigor mortis slight. Post-mortem lividity very marked on limbs, back, neck, and face. Pericardial sac distended with straw-colored fluid, containing shreds of fibrin. Heart weighed 490 grams, and was covered with fibrinous exudation, as was inside of pericardial sac—fibrinous pericarditis. Valves also covered with fibrinous exudation, thereby rendering the mitral incompetent. Right auricle dilated and contained clot, which extended into ventricle and pulmonary artery. Bronchial tubes inflamed. Right lung in state of red and gray hepatization; left congested and œdematous. Weight of left lung, 535 grams; weight of right, 1,220 grams. Pleura inflamed and covered with fibrin, as was right lung, the fibrin forming a complete covering one-fourth inch thick. Liver congested; weight, 2,730 grams. Gall bladder distended with bile. Kidneys red; typical pneumonic kidney; weight of left, 270 grams; of right, 250 grams. Urinary bladder contained small quantity of urine. Spleen enlarged, soft, and pulpy; weight, 325 grams.

Case 12.

Tubercle of lung and kidney (miliary).

I. J.; aged 23 years; nativity, Missouri; admitted to the United States Marine Hospital, New Orleans, La., February 23; died February 26, 1894.

History.—On admission to the hospital the patient complained of malaise and cough, from which he had suffered for about four weeks. Almost immediately after his arrival at the hospital he suffered from a severe chill, accompanied by fever, and symptoms of pneumonia, involving first the upper and then the lower lobes of right lung, rapidly developed.

Necropsy (*fifteen hours after death*).—Body that of a well-developed young negro man. Rigor mortis marked. Heart pale in color and somewhat fatty; right cavities engorged; chicken-fat and post-mortem clots found in both sides; valves normal; weight, 330 grams. Pericardial fluid increased to about 75 c. c. Right lung in second stage of pneumonia throughout; pleuritic adhesions very numerous and firm; weight of lung, 950 grams. Left lung contained numerous deposits of miliary tubercle near apex; lower lobe congested; pleuritic adhesion slight; weight of lung, 950 grams. Liver normal; weight, 1,980 grams. Left kidney normal; weight, 220 grams. Right kidney contained tuberculous deposits (miliary) in the cortical portion of its middle segment; weight, 180 grams. Spleen normal; weight, 250 grams.

Case 13.

Pericarditis.

J. M.; aged 57 years; nativity, Ireland; admitted to the United States Marine Hospital, Baltimore, Md., December 13; died December 28, 1893.

History.—On the day of admission patient stated that he had been sick with a "bad cold" for two weeks before coming to hospital; also said that three days before he fell and hurt himself in the right side of chest, and since that time he began to feel worse. The temperature on the day of admission was 38° C., and it was 38° C. again on the evenings of the 14th and 16th, and from the latter date to the evening of the 20th temperature was normal, and patient seemed to be improved and said he was feeling much better; his appetite was good. On the morning of the 21st he had a chill, and that evening his temperature went up to 38.8° C. and his pulse to 120, and during that night the pain in the chest was greatly increased. Physical examination the following evening revealed dullness on percussion over the lower right side of chest, and on auscultation crepitant, mucous rales and a rubbing or friction sound were heard on the posterior part of the right side of chest. The sputa that day was somewhat rusty. Temperature, 38.8° C.; pulse, 120 per minute. On the 25th pain in side of chest was very severe, and from this time on the sputa was somewhat dark in color. On auscultation December 26 rales were heard both at the end of inspiration and expiration.

Necropsy (*thirteen hours after death*).—Rigor mortis well marked. Body well nourished. Pericardial sac was filled with a large quantity of yellowish fluid. The heart and pericardium had a marked roughened appearance; this roughness was easily peeled off, leaving a smooth, shining surface. From the apex to the base of the right lung, and adherent to it, were here and there patches of coagulated serum resembling fat. The right lung (two lower lobes) was adherent to the side of chest and also to the diaphragm. The two lower lobes were much increased in size and the tissue resembled that of liver. On pressing with the finger it did not indent, but tore, and a piece of the lower lobe sank in water. On section a dirty-red purulent fluid oozed. The upper lobe seemed to be normal; it floated in water and crepitated on pressure. The weight of the right lung was 2,041.4 grams. The left lung was normal; weight, 680 grams. Liver very much enlarged; weighed 2,800 grams. Kidney a little enlarged, otherwise normal; capsule peeled off easily.

CASE 14.

Traumatic.

H. J.; aged 46 years; nativity, Finland; admitted to the Marine Hospital, Stapleton, Staten Island, New York, January 10; died January 13, 1894.

History.—Patient stated at time of his admission that ten days previous he had fallen and injured his side; also that he had pain in chest and cough. Examination revealed consolidation of lower lobe of right lung, increased bronchial breathing, loss of vesicular murmur, breathing light and shallow.

Necropsy (*eighteen hours after death*).—Thorax opened; pericardium contained considerable fluid; heart larger than normal; valves competent. Fracture of seventh rib on right side. The posterior fragment had penetrated the lower lobe of lung, which was the seat of red hepatization and hypostatic congestion. Upper lobes œdematous and presenting signs of slight capillary bronchitis and catarrhal pneumonia. Liver normal. Other organs not examined.

LOBULAR PNEUMONIA.

CASE 1.

S. H. (colored); aged 35 years; nativity, Kentucky; admitted to the Marine Hospital, Memphis, Tenn., April 11; died April 18, 1894.

History.—Three days before admission to the hospital the patient was seized with a chill and fever. He had a cough and noticed some blood in his expectorations. At the time of admission he had fever, pain in the chest, and rapid and shallow breathing. Signs of bronchitis were present, but no consolidated area was found in the lungs. There was evidence of pleurisy and of pleuritic effusion on the left side. Cough and expectoration were slight. From this time the fever diminished, but the respiratory symptoms grew worse. Signs of lobular pneumonia developed quickly, and the areas of consolidation increased progressively until death.

Necropsy (*four hours after death*).—No post-mortem lividity. Rigor mortis present. General nourishment fair. Pupils moderately dilated. The heart weighed 290 grams. The pericardial sac was normal. All the valves were competent. The heart had stopped in systole The left lung weighed 990 grams. There was some inflammation of its pleura, but only a slight adhesion at the back and no effusion in the pleural cavity The upper lobe of this lung was more or less consolidated all through and sank in water. The lower lobe contained patches of consolidation in its upper part. The right lung weighed 634 grams. It was entirely adherent to the chest wall, except in a small area at the front of the lower lobe. There was no effusion in the pleural cavity. There was adhesion between the lobes of the lung. The upper lobe and a part of the lower were affected with lobular pneumonia, but in a less degree than the other lung. The middle lobe was nearly normal. The liver was normal in color and in general appearance; weighed 2,005 grams. The left kidney weighed 170 grams; the right, 189 grams. The spleen weighed 210 grams.

CASE 2.

Bilateral.

C. F. H.; aged 35 years; nativity, New York City; was admitted to the United States Marine Hospital, New Orleans, La., March 19; died March 29, 1894.

History.—The patient was taken ill six days before admission, on his vessel, while on the way from New York City, with a slight chill, dyspnœa, and pain in left side. He received medical attention from a physician, one of the passengers. On arriving at this city the ambulance was summoned and he was brought to the hospital. On admission he complained of breathlessness and considerable pain in left lumbar region. He had but little cough, though had "spit blood" twice; no appetite; bowels constipated. Auscultation found the left lung silent except at apex. Temperature, 37.8° C. and rising; pulse, 100, thready; respiration, 24 and fairly free. These symptoms were aggravated on the following day to 39.5° C., 128, and 44, respectively. The bowels were unloaded with a gentle purge, followed by an enema; and an abundant supply of easily digested and nutritious food given. The patient improved satisfactorily under supporting and revulsive treatment for several days, but suddenly sank, became comatose, and died at 12.45 p. m.

Necropsy (four hours after death).—Body that of a young white man; slender, yet fairly well nourished. Post-mortem lividity slight. Rigor mortis absent. Heart: Weight, 422 grams; normal size; pale and loaded with fat; pericardial sac normal; tricuspid valve incompetent; other valves competent, but showing traces of fatty deposit. Ventricles somewhat hypertrophied and containing firm ante-mortem clots entangled with the columnæ carneæ. The left lung (weight, 730 grams), inferior lobe, and the entire right lung (weight, 1,230 grams) were in red hepatization and impervious to air. The apex of the left was thickly studded with small tubercles, which were found at intervals throughout both lungs. Both pleural cavities were almost obliterated by recent adhesions. Liver dark red and congested. Other organs not examined.

ABSCESS OF LUNG.

F. S.; aged 23 years; nativity, Tennessee; admitted to the United States Marine Hospital, Cairo, Ill., February 24; died March 20, 1894.

History.—Patient states that for three days last December he was exposed to severe weather, and that during that time his feet and legs were wet and his trousers frozen. Previously enjoyed excellent health. He was taken with severe cough and pain in both sides, being worse in right. Gives no history of having raised blood at any time. He has recently lost several pounds in weight. Severe pain in right side, aggravated by cough and deep inspiration; expectoration white and scanty. There were signs of consolidation of lower lobe of right lung, with pleuritis on both sides. February 25 what was apparently an abscess ruptured in right lung. A large quantity of fetid pus was expectorated; cough very severe; prostration considerable;

respiration hurried; pain in right side much aggravated. Patient continued to raise large quantities of very offensive purulent matter. He steadily failed till death occurred.

Necropsy (twenty-seven hours after death).—Postmortem lividity marked. Cadaveric rigidity moderate. Body very much emaciated. Right lung was apparently destroyed, and the pleural cavity was half filled with pus. Left lung bound by a few apparently recent adhesions. Pericardial fluid considerably increased in quantity. Pericardium adherent in places. Heart was covered with a villous growth of fibrin, "cor villosum," and weighed 341 grams. Liver pale; weight, 7,183 grams. Spleen bound by a few adhesions. Pancreas apparently normal. Both kidneys were enlarged; capsules adherent. Right kidney weighed 217 grams; left, 201 grams.

GANGRENE OF LUNG

CASE 1.

W. S. (colored); aged 26 years; nativity, Mississippi; admitted to the United States Marine Hospital, Memphis, Tenn., January 4; died January 7, 1894.

History.—The patient was brought to the hospital in the ambulance in a very weak condition, and was scarcely able to give an account of his sickness. It appeared that he had been sick nearly a month, and he believed that he had had both malarial fever and pneumonia. I judged that epidemic influenza had been first in the field. He had moderate, irregular fever, bloody expectoration, and a very foul breath. Bronchitis was present, and there were large areas of consolidation in the upper and lower parts of the right lung. His sclerotics and skin showed icterus. He was past aid when admitted to the hospital.

Necropsy (eight hours after death).—Post-mortem lividity about shoulders, arms, and back. Rigor mortis present. General nourishment poor. Pupils natural. The heart weighed 230 grams. The pericardial sac contained some serum, and the visceral pericardium showed much congestion, with fibrinous deposits along the lines of the larger vessels. At the apex of the heart were two small, thick appendages of the pericardium, which appeared to be congenital rather than the remains of inflammatory bands. The valves of the heart were all competent. The bronchial lymphatic glands were much enlarged, and one of the largest was found slightly cheesy in the center. The left lung weighed 372 grams. Its pleural cavity was normal. The lung was much congested throughout. The right lung weighed 1,810 grams. Firm adhesions existed in all parts of its pleural cavity, and it could not be separated at all from the diaphragm. The lung filled the cavity and had the marks of the ribs on its surface. It barely floated in water. When cut the tissue exuded offensive, bloody pus, and the entire lung appeared to be gangrenous. A large abcess was found in the lowest portion of the lung, against the diaphragm, filled, like the lung tissue, with offensive pus. The liver was normal in color. It weighed 1,999 grams. The gall bladder contained only a little bile. The left kidney weighed 239 grams; the right, 240 grams. The spleen weighed 584 grams, and although large, was normal in look and feel. The sclerotics and the entire surface of the body showed icterus, which was probably due to septicæmia caused by the putrefying lung.

CASE 2.

J. M.; aged 59 years; nativity, Ohio; admitted to the United States Marine Hospital, Evansville, Ind., March 19, 1894; diagnosis, malarial cachexia. Readmitted May 12, 1894; diagnosis, gangrene of lung; died May 21, 1894.

History.—Patient was slightly emaciated, complexion of saffron color. Had had slight cough for about fifteen days. Had had malarial fever at intervals for several years. Temperature normal on the morning of the 20th; in the evening temperature was 38.6° C. Throughout illness thermometer indicated normal in morning and 38° C. in evening. On physical examination percussion elicited dullness over apex of right lung. Liver and spleen were enlarged. Auscultation gave mucous rales over anterior portions of both lungs. Heart's action rapid, and continued so with irregular exacerbations of palpitation. Expectoration was at first insignificant. About the 1st of May the sputum became offensive and brownish in color. The odor was characteristic of a gangrenous process in the lung, and carbolated gauze and disinfectants were constantly employed. Patient gradually sank, dying of exhaustion in the afternoon of May 21, 1894.

Necropsy (*four hours after death*).—Body much emaciated. Rigor mortis marked. Heart and pericardium normal. Left lung weighed 975 grams, and hypostatic congestion was present. The right lung weighed; 1,200 grams; was adherent to chest wall and presented a large cavity at apex. The cavity was filled with a grumous, dark, offensive, and stinking fluid. Small cavities were seen in the lower lobe. Liver weighed 1,420 grams. Spleen was soft and weighed 180 grams. Kidneys normal.

GASTRITIS—STENOSIS OF ARCH OF AORTA.

S. H.; aged 49 years; nativity, West Indies; admitted to the Marine Hospital, Stapleton, Staten Island, New York, September 28; died October 3, 1893.

History.—Patient stated on admission that last Sunday, the 24th instant, he began to feel like vomiting, and did vomit next day, and had been sick at the stomach ever since; no appetite; had taken castor oil, and had about two passages a day; had had soreness across lower part of abdomen, also over epigastrium. Moderate drinker; no gonorrhœal or specific history. Sleeps poorly; no headache. Physical examination showed a well-nourished body, no apparent abnormality of viscera, of abdomen, or thorax. Complained of pain over upper part of abdomen. On the 29th his stomach was somewhat distended. Patient stated that he strained himself by sucking at a water pipe, and that he noticed the pain just afterwards. Nausea appeared about the same time. Ordered turpentine stupes over stomach. On the evening of the same day the pain was somewhat relieved. Ordered poultice every hour. The following day the pain was easier, but bowels constipated. Poultices continued and enema of hot water ordered. On October 1 patient was very weak; was ordered milk punch every hour. On the 3d the pain had ceased, but no movement had occurred for two days. Ordered hot water enema at once; patient very weak. At 11.30 a. m. patient grew rapidly worse and dropped in an unconscious condition, and died in a few minutes.

Necropsy (*four hours after death*).—Body well nourished. Post-mortem rigidity well marked. Post-mortem congestion of face and dependent portion of body. Thorax: Lungs collapsed, heart hypertrophied, valves competent, and a stenosis was seen just above the aortic valves, in the ascending portion of the arch of the aorta. There were several small ulcers in the beginning of the aorta, which were lined with atheromatous plates and had undergone fatty degeneration. Liver and kidneys fatty and congested. Spleen quite small. Stomach seat of extensive inflammation, and a muco-purulent exudate covered its under surface, which was reddened and inflamed, it being in some places impossible to efface the rugæ by traction on the walls of the viscus. Pancreas hard and enlarged.

CHRONIC DIARRHŒA—GASTRIC CATARRH.

I. R. W.; aged 41 years; nativity, Maryland; admitted to the United States Marine Hospital, Baltimore, Md., August 18; died August 24, 1893.

History.—Diarrhœa of six weeks' duration; vomiting; pain in back; evacuations frequent, thin, watery, and of a brownish color. Pulse weak, but not rapid. Tongue dry and coated, and the thirst was so great that patient called for water every few moments. He was addicted to excessive use of opium, and not long since stated that he was going to drink himself to death. His temperature was as high as 39.8 C. August 24, at 2.40 a. m., became almost pulseless and breathing slow and labored; extremities were very cold. He died at 3 o'clock a. m.

Necropsy (*twelve hours after death*).—Body fairly well nourished. Rigor mortis. Lungs were of a waxy color and crepitated upon pressure. Here and there were some pleuritic adhesions. Heart normal; the pericardium contained a small quantity of serum. Liver very much enlarged, extended into the left hypochondriac region; the anterior inferior surface had already undergone post-mortem changes, being of a greenish color. Gall bladder fully distended; spleen and pancreas normal. Stomach congested and of a very red color; the serous covering of it and of the duodenum was red and glistening. The mucus membrane contained red striæ made of small extravasations of blood. The mesenteric glands were much enlarged. The mucus membrane of lower part of intestines (Sigmoid flexure and rectum) was thickened and rough, apparently due to chronic inflammation.

CIRRHOSIS OF LIVER—VALVULAR DISEASE OF HEART—ASCITES.

E. W.; aged 45 years; nativity, Connecticut; admitted to the United States Marine Hospital, New Orleans, La., August 26; died October 18, 1893.

History.—Patient had suffered many months from an enormous distention of his abdomen with fluid and a progressive emaciation, which, with failing strength, brought him to the hospital. He had been a hard drinker for many years, his excess in this line being only limited by his funds. On examination at admission the temperature was subnormal; pulse wiry, 84; respiration embarrassed, 30 per minute. Owing to accumulation of fluid the liver could not be well defined, but the impression to the hand was that of hob nail. Urine, 1,000 c. c. in twenty-four hours and albuminous. The temperature rose and fell (36° to 39° C.) with rhythmical regularity daily. A supporting and stimulating treatment was instituted, and, on August 31, the dyspnœa preventing his lying down, his abdomen was tapped and 24,000 c. c. of a highly albuminous fluid withdrawn, with great relief to his sufferings. This was twice repeated, withdrawing respectively 24,000 c. c. and 28,000 c. c., with such marked relief as enabled him to spend many days walking about the city parks. He began to fail rapidly about October 15, passing into coma twelve hours before death.

Necropsy (*nine hours after death*).—Body that of a much emaciated elderly white man. Rigor mortis slight. Post-mortem lividity marked. Heart: Weight, 240 grams; fatty; pulmonary valve competent; the other three incompetent, the incompetency of the mitral evidently due to a number of small nodules upon it and preventing the approximation of valve leaflets. Wall of lef ventricle thickened. Lungs hypostatically congested. Left, weight, 640 grams; pleural cavity showed a few old adhesions. Right, weight 610 grams; pleural cavity normal. Abdominal cavity filled with albuminous fluid. Peritoneum much thickened and nodular. Stomach thickened and slightly dilated. Large intestine studded with nodular masses. Liver contracted; hobnailed; capsule closely adherent; creaking under knife; very dense; almost black in color and weighing 920 grams. Gall bladder walls thickened; ducts thickened at expense of caliber and almost impervious. Gall bladder distended with fluid bile, and five calculi, weighing together 52 grams. Pancreas: Weight, 100 grams; nodular and of a light straw color; fatty degeneration evident. Kidneys: Very dark; congested; weight, left 145 grams, right 150 grams. Spleen: Weight, 400 grams; almost black in color and very dense on section.

ABSCESS OF LIVER.

T. H.; aged 40 years; nativity, Ireland; admitted to the United States Marine Hospital, San Francisco, Cal., April 20; died June 7, 1894, at 6.50 o'clock a. m

History.—On admittance patient complained of prostration, sweating, vomiting, chills, and fever. He was constipated, and the tongue was covered with a brownish fur. His illness followed a prolonged alcoholic debauch. Patient had worked as a fireman on a Panama passenger steamer. Examination of blood specimen for plasmodium malariæ was negative. The liver, especially the left lobe, seemed somewhat enlarged, but no signs of fluctuation could be elicited. There was a tendency to constipation, but the stools showed no absence of the bile secretion. Not until the 19th of May did he complain of pain between ensiform appendix of sternum and the umbilicus. One and one-half grams per diem of quinine were given, and for the first week there was a steady decline in the temperature. After the eighth day the quinine was stopped, and afterwards recommenced, and stopped again subsequently. On the morning of May 29, at 3 o'clock, patient suddenly developed agonizing pain in the epigastrum, which was relieved with morphia. It was followed by no special change in the temperature, no thready pulse, tympanitis, nor other indication of perforation. On May 31 there was a forcible pulsation of a nonexpansile character midway between ensiform appendix and the umbilicus. Fecal matter passed that morning showed presence of half-digested blood, streaked with pus. On June 4 his skin showed a pronounced icterus. During the ensuing time he had several attacks of extreme pain, with vaso-motor relaxation and cold sweats. On the morning of the 7th, while straining at stool, he suddenly became unconscious and shortly after expired.

Necropsy (*five hours after death*).—No post-mortem rigidity. Skin stained with bile. Body emaciated. Thoracic viscera healthy. On opening the peritoneum a large clot of blood, flattened out and extending from the liver into the pelvis, was seen. The blood clot, which measured about 1½ liters, was partially organized in places, showing that there had been more than one hemorrhage. Situated on the under surface of the liver, involving a portion of the left lobe, the lobulus spigelii, caudatus, quadratus, and the hepatic substance toward the orifice of the gall bladder, was an abscess cavity with a capacity of about 250 c. c. The cavity contained only pus of a thick, shreddy appearance. The branch of the vena porta going to the left lobe of the liver was ulcerated through, and was the cause of the hemorrhage into the peritoneal cavity The gall bladder was distended with blood and pus, the abscess having eaten into it and destroyed some small blood vessels and discharged a portion of the abscess contents into it. This would account for the blood and pus observed in the stools also the jaundice which appeared a few days prior to death. The right lobe of the liver was a little enlarged and exhibited advanced fatty degeneration. The other viscera appeared healthy.

LARDACEOUS LIVER.

F. W.; aged 27 years; nativity, Finland; admitted to marine ward, St. Joseph's Hospital, Savannah, Ga., December 26; died December 27, 1893.

History.—(This was gotten from the master of bark *Dillon*, as the patient was unconscious at the time he was brought into the hospital, and so remained until his death.) The patient was shipped in New York on August 1, 1893. Stated at that time that he had just been discharged from the hospital. Had the appearance of a man just recovering from a severe attack of malarial fever. Worked for twenty-four days without complaining; then was taken with diarrhœa. Could not retain food for any length of time. Resumed work after fifteen days, but was very pale, had lost a great deal in weight, and the least exertion caused shortness of breath. After working for a period of twenty days he remained in his bunk until the day of his arrival in the hospital. Condition on arrival: Bladder distended with pale urine; great emaciation; eyes sunken; alopecia very marked; quiet delirium; legs and forearms flexed; tongue coated and furrowed; no fever; abdomen distended and tympanitic. Physical examination was negative, with the exception of the marked enlargement of the liver, which was easily determined by percussion and palpation, and evidences of syphilitic infection.

Necropsy (*nineteen hours after death*).—Rigor mortis moderate. Body poorly nourished. Lower lobe of left lung congested and slightly œdematous. Lower lobe of right lung congested, and also slightly œdematous; presented several small cicatrices. Pericardial cavity contained about 10 c. c. of fluid; heart muscle and valves normal.

Weight of liver, 2,340 grams; uniformly enlarged; consistence doughy; color grayish and glistening; the deposits of the amyloid material were in patches, almost uniformly distributed over the whole organ. These spots resisted the knife almost like new cartilage, and presented an anæmic and whitish appearance. Sections of this deposit assumed a mahogany color when subjected to the "iodine-sulphuric acid" test, changing to the violet tint on addition of latter. Spleen slightly enlarged; weight, 224 grams. No amyloid deposit. Kidneys normal in weight and reaction. Stomach and intestines showed evidences of chronic congestion and catarrh

PERITONITIS, ACUTE.

Case 1.

J. S.; aged 46 years; nativity, Norway; admitted to the United States Marine Hospital, Portland, Me., October 21; died October 22, 1893.

History.—Patient was taken sick three days previous to admission with severe pains in the abdomen. Pain was paroxysmal in character and very intense. There was some vomiting and obstinate constipation. Upon admission he was suffering excruciating agony. Face had an anxious expression and patient was slightly delirious. The abdomen was tender on pressure and tympanitis marked. All the symptoms increased in severity, and death closed the scene on the following day.

Necropsy (*seventeen hours after death*).—Rigor mortis marked, lividity slight, and body well nourished. Heart normal; weight, 285 grams. Lungs healthy, the right weighing 650 grams; left, 625 grams. The peritoneum was much redder than normal, the blood vessels being dilated, thicker, and covered with a layer of fibrin. The peritoneal cavity contained about 1,000 c. c. of sero-purulent fluid. The intestines were much distended and the serous coats of them highly inflamed. No evidence of any perforation could be found. Liver was normal, weighing 1,650 grams. Stomach normal. The other abdominal viscera were macroscopically normal. Brain not examined.

Case 2.

S. W. (colored); aged 22 years; nativity, Tennessee; admitted to the United States Marine Hospital, Memphis, Tenn., February 12; died February 13, 1894.

History.—The patient was near the fatal termination of his sickness when brought to the hospital and could give little account of himself. He had had pain in the abdomen for a week, but had not given up until the day before, when the pain became very severe. His symptoms were peculiar, as his abdomen was extremely retracted, suggesting lead colic, and a correct diagnosis of the disease was not made.

Necropsy (*twenty-four hours after death*).—No post-mortem lividity. Rigor mortis strongly marked. General nourishment good. Pupils dilated. The heart weighed 303 grams. The pericardial sac contained a little reddish serum and the visceral pericardium was distinctly injected, particularly at the apex of the heart. All the valves of the heart were competent The left ventricle was somewhat hypertrophied. The left lung weighed 270 grams. Its pleural cavity was free from adhesions. The right lung weighed 300 grams. Its lobes adhered together and small adhesions existed in the pleural cavity at the back of the lung. The inflammation of the pleura was evidently recent. Both lungs were congested, but otherwise normal. The peritoneal cavity contained considerable serum holding fibrinous flakes in suspension, and the peritoneum was the seat of severe inflammation, which was most severe in the portion covering the ileum. There were fibrinous deposits on the intestines. The stomach was normal in appearance on both outer and inner surfaces. The upper portion of the small intestine was distended, as is usual in peritonitis. At about the beginning of the ileum there was a sudden constriction and the entire following portions of the small intestine and the whole of the large intestine were closely contracted. No volvulus, invagination, or other cause of obstruction was found. The vermiform appendix was very long and was confined by the mesentery for only a short portion of its length. The free part was very large, in consequence of thickening of its wall. It bore less signs of inflammation of its peritoneal covering than some other parts of the intestine. The whole intestine was examined for some evidence of a perforation and none was found. Its mucous membrane was normal in appearance for several feet at the beginning of the constricted portion. The liver was normal in color and appearance. It weighed 1,650 grams. The left kidney weighed 160 grams; the right, 135 grams. Both were normal in gross appearance. The spleen was very small, weighing only 122 grams.

CHRONIC BRIGHT'S DISEASE

Case 1.

C. A. W.; aged 43 years; nativity, Maine; admitted to the United States Marine Hospital, Boston, Mass., October 20; died December 21, 1893.

History.—Patient stated when admitted that his feet and ankles had been swollen for two years; that he passed a good deal of urine, had lost considerable flesh, felt weak, and had some ascites. Urinary analysis showed that he passed between 2,000 and 2,500 c. c. of urine in the twenty-four hours, of pale color and low specific gravity, and which contained a small quantity of albumen. Examination revealed forcible cardiac action, distinct mitral and aortic murmurs, high arterial tension, and atheroma of arteries. Later, among the prominent symptoms were disordered vision, œdema of eyelids, dry skin, dyspepsia, constipation, shortness of breath on exertion, marked œdema of lower extremities, increased ascites, producing dyspnœa, vomiting, disgust for food, and hiccough. His abdomen was aspirated three times for relief of distressing symptoms, at intervals of about three weeks. Total amount of fluid removed, about 8 gallons (35.24 liters). Mind remained clear until forty-eight hours before death, when he became delirious and died in a state of coma.

Necropsy (*fifteen hours after death*).—Body of large size; strongly built white male; emaciated. No post-mortem discoloration. Rigor mortis marked. Four small cicatrices on abdomen near umbilicus. Pupils dilated. Pericardial sac contained normal quantity of fluid. Heart weighed after opening 490 grams. Left ventricle dilated; walls hypertrophied concentrically and softened. Left auricle dilated and several small ante-mortem clots found. Mitral valve incompetent, contracted, thickened, and adhesion of one segment to wall of ventricle, with contraction of chordæ tendineæ. Aortic valve atheromatous, thickened, and contracted. Heart in systole. The large arteries were atheromatous. Larynx and trachea congested. Left lung weighed 810 grams, was œdematous, and there was present hypostatic pneumonia of lower lobe. Pleural cavity normal. Right lung weighed 935 grams; was œdematous. Pleural cavity was obliterated by firm adhesions of lung to chest wall and to diaphragm below. Abdominal cavity contained about 5,000 c. c. of serous fluid. Pharynx and œsophagus normal. Stomach weighed after opening 200 grams. Venous stasis was present. Walls hypertrophied and chronic catarrhal inflammation of the mucous membrane. Large and small intestines normal. Liver was congested; weighed 1,720 grams. Gall bladder distended. Spleen inflamed and softened; weighed 190 grams. Kidneys were of the small red variety. The left weighed 90 grams, and the right 100 grams. The surface of both presented a granular appearance. Capsules adherent and thickened. On surface of right kidney were three small cysts, distended with a clear, transparent fluid. On section the tissue was tough and resistant. Cortical portion atrophied to about 1 line in thickness. Pyramids contracted and darker than cortex. The line of demarcation between the two portions irregularly shown. Pelves contracted. Ureters normal. Urinary bladder empty; structure normal. Deep lymph glands in cervical region enlarged and softened, some being entirely broken down. Those in lumbar region normal.

CASE 2.

Aortic and mitral insufficiency.

A. B.; aged 48 years; nativity, England; admitted to the United States Marine Hospital, Wilmington, N. C., October 25; died October 30, 1893.

History.—He was transferred from Jacksonville, Fla. On admission to hospital was emaciated; complained of shortness of breath; urine contained a large amount of albumen.

Necropsy.—Post-mortem lividity moderate. Rigor mortis slight. General nourishment poor. Pupils dilated. Heart weighed 540 grams; hypertrophied, especially the left ventricle. The pericardial sac contained a quantity of sero-purulent fluid. The aortic valve incompetent and contained vegetations. The mitral valve incompetent, hard, thick and crumpled, and covered with vegetations. The papillary muscles and chordæ tendineæ were shortened and bound together by adhesions and vegetations. The lungs and pleural cavities were normal. The liver was normal; weighed 1,500 grams. The kidneys showed an advanced stage of chronic inflammation in the cortical portions. The capsules were firmly bound to the cortex in various places by cicatricial adhesions. The pyramids were congested and contained several small cysts filled with a fluid resembling pus.

CASE 3.

M. E.; aged 46 years; nativity, United States; admitted to the United States Marine Hospital, San Francisco, Cal., May 3; died June 16, 1894, at 1.30 o'clock a. m.

History.—On admittance patient complained of spells of dyspnœa and dropsy of the lower extremity. He had a sallow, anæmic appearance. Treatment was carried on, but gave only temporary relief, and he declined slowly. On June 12 he became very restless, soon developing a violent mania. He became so intractable that confinement and restraint were necessary. On the 14th, as the mania subsided, he lapsed into unconsciousness, and remained so until the time of his death.

Necropsy (*nine hours after death*).—Rigor mortis well marked. Tissues dropsical; some post-mortem lividity about the neck and back. Slight traces of pericarditis, such as patches of inflammatory dots and small fibrinous exudate in the pericardial sac. Hypostatic congestion in posterior parts of both lungs. Liver and spleen normal. Engorgement of portal system of veins. The right kidney was diminished in size, nodular on the exterior, dark red in color, and resistant and tough on section; weight, 90 grams. Left kidney very greatly contracted; surface nodular and covered with small cysts, which were filled with a dark jelly-like material. The cortex almost obliterated by reason of cirrhotic tissue. Color dark reddish blue; weight 60 grams. Both kidneys contained much fat in the pelves.

CASE 4.

E. L. (colored); aged 55 years; nativity, New York; transferred to United States Marine Hospital, Detroit, Mich., from hospital, Port Huron, Mich., January 30; died February 2, 1894.

History.—The patient stated that he had been sick in the Hospital, Port Huron, for six weeks. Previous to that he had been well except for a feeling of weakness and an irresistible desire to sleep at all times. At present he was suffering from shortness of breath, headache, and drowsiness. Urinated freely and had to pass his water three or four times during the night. Appetite good; bowels open. Had a chancre a year ago. Physical examination showed the body well nourished. Respiratory movements quickened. Vesicular murmur roughened, but no rales heard over either lung. Heart sounds normal, but strong impulse felt over left fifth intercostal space. Liver and spleen not enlarged. Abdomen not swollen. Slight œdema in legs. Stricture in membranous portion of urethra. Urine small in quantity, high colored, smoky, reaction acid; specific gravity, 1.010; about 40 per cent albumen present. Temperature, 37° C.; pulse, 82. The patient had slight fever (38.4° C.) on the 31st instant, but otherwise his condition was unchanged until the morning of February 2. He was then suddenly attacked with dyspnœa and great restlessness, and soon became unconscious, with stertorous breathing, due to œdema of the lungs. Pulse still full and strong. He also had two convulsions within three hours. At 9 a. m. he rallied and was able to talk and take medicines. The dyspnœa and other symptoms, however, returned, and he died at 2 p. m. of the same day.

Necropsy (*sixteen hours after death*).—Body well nourished. Rigor mortis fairly well marked. Heart normal. Right lung bound down by old adhesions; both lungs filled with carbonaceous particles. Liver of deep red color. Spleen small. Right kidney of natural size; capsule nonadherent; cortical portion thin, of a pale yellow color; pyramidal portion of a light red; pelvis very fatty. Left kidney larger than normal; small venous cyst on outer surface; in other respects similar to right. Other organs not examined.

CASE 5.

J. H.; aged 46 years; nativity, Germany; admitted to the United States Marine Hospital, San Francisco, Cal., May 16; died June 7, 1894, at 1.05 o'clock a. m.

History.—He was admitted in a cyanosed, semiconscious condition, suffering from uræmic poisoning. The urine contained a large quantity of albumen. Patient had been treated here on two previous occasions. On being admitted the first time, March 19, 1894, his illness was primary acute nephritis. He responded promptly to treatment; the albumen disappeared from his urine and his general condition was good. At the end of two weeks the patient left the hospital contrary to advice. A repetition of the excesses which brought on the first attack induced subacute nephritis. He was again received and treated at the hospital, and his condition was so far relieved at the end of three weeks that he left once more. After readmittance for the last time treatment produced no amelioration; general anasarca set in, dysnœa and cyanosis increased, and, following on, vomiting, unconsciousness, Cheyne-Stokes's respiration, and death.

Necropsy (*nine hours after death*).—Post-mortem lividity and rigidity. Body fat and flabby; the extra vascular spaces, including the serous cavities, filled with fluid. A small part of lower lobe of right lung in a state of hypostatic congestion. The lungs were small, in great disproportion to weight of body. They were also slightly compressed from a small serous exudate in the pleural sacs. Heart was considerably hypertrophied, particularly the left ventricle. The ventricles and auricles were filled with post-mortem clots. The heart weighed 660 grams. The omentum contained large quantities of fat. Liver and spleen appeared about normal. Both kidneys were small; the capsules thickened and adherent in places. The surfaces of the organs were covered with small nodules. Numerous minute cysts existed on the surface. When stripped of the capsules they presented a dark red color. On section the substance of the kidneys was tough and leathery. The fat about the pelvis was greatly increased.

CASE 6.

M. M. (colored); aged 28 years; nativity, Portugal; admitted to the United States Marine Hospital, Baltimore, Md., April 19, 1892; died January 19, 1894.

History.—Was transferred from Norfolk, where he had been treated for an aggravated case of syphilitic iritis, for which he had been under treatment since November of the previous year. On admission to this hospital the condition of the eye indicated iritis, and the treatment was continued. On the night of April 12, 1893, the patient had a severe chill, having felt cold all night. In the morning was perspiring and complained of pain in back of his neck. April 14 he complained of severe pain in head. Œdema about the eyes appeared on the 17th, and increased during the 18th and 19th. He suffered much pain during this time, and deglutition was difficult. He remained in this condition until the 23d, when the œdema disappeared and deglutition became easy. April 23 he began to vomit after meals and complain of pain in the epigastric region. On the 2d of May his respiration became very irregular. Urine examined on May 12 revealed large quantities of albumen. October 16 he began to have cramps and twitching of muscles of face, hands, and feet. Suffered with these cramps almost every other night. During the last three days of his illness he bled considerably from nose and was in a semicomatose condition.

Necropsy.—Rigor mortis well marked. Body emaciated. Heart much enlarged and contained a large ante-mortem clot. Heart surrounded by 500 grams of fat. Lungs normal. Liver stained with bile; weight, 4,000 grams. Spleen enlarged; weight, 500 grams. Suprarenal capsules contracted and indurated. Left kidney very small, contracted; cortical portion nearly obliterated; small cysts near surface; capsule easily detached and having a rough surface; weight, 250 grams; right similar to left.

CASE 7.

C. A.; aged 54 years; nativity, Maine; admitted to United States Marine Hospital, Boston, Mass., October 2; died October 15, 1893.

History.—Was in the hospital a short time since for chronic Bright's disease, with œdema and dyspnœa. At time of last admission the œdema of connective tissue was general. Dyspnœa distressing. Passed very little urine. Heart hypertrophied and its valves incompetent. Pericardial sac and pleural cavity contained each effusions of bloody serum and both were aspirated; 400 c. c. taken from the former and 1,000 c. c. from the latter. Left ventricle was pierced by needle, as shown at autopsy four days later. But there were no direct symptoms at time and no perceptible effect on course of disease or its termination from this accident, which was unavoidable from the excessive size of heart. The area of dullness included the whole of left side of chest, the intercostal spaces being entirely obliterated and filled out. The needle of the aspirator entered directly in axillary line and between sixth and seventh ribs; no heart impulse obtainable at that point. No bad result, as stated before, occurred. The patient, on the contrary, experienced relief, and on next day asked to have the operation repeated.

Necropsy (*twelve hours after death*).—Body large; strongly built, muscular white male. Post-mortem discoloration decided on face, neck, and back. Rigor mortis moderate. Small papilloma on umbilicus. Subcutaneous tissues infiltrated with serum. Pericardium nearly empty. Capacity about 300 c. c. Heart enormously hypertrophied; weight, 885 grams. Three fingers could be readily pressed through mitral opening. Tricuspid and aortic semilunar valves also incompetent. At apex of left ventricle there were several punctures plainly discernible, one of which entered cavity. Larynx and trachea normal. Lungs congested posteriorly; collapsed inferiorly from pressure. Pleural cavity contained 1,500 c. c. bloody fluid. Peritoneum congested. Stomach inflamed; a chronic catarrhal condition; vessels enlarged and tortuous. Intestines distended with gas. Liver: Hypertrophic cirrhosis; Glisson's capsule contracted in places; weight, 2,120 grams. Kidneys granular and contracted; cortical and medullary line almost obliterated. Surface of right kidney contained several small cysts; weight, 225 grams; this is somewhat over the normal, but subject was much over normal in size. Left kidney weighed 175 grams. Spleen small; weight, 145 grams.

CASE 8.

Valvular disease of heart.

H. S.; aged 45 years; nativity, Newfoundland; admitted to United States Marine Hospital, Boston, Mass., June 25, 1894, suffering from stenosis of mitral valve and chronic parenchymatous nephritis, with general dropsy and œdema; died July 1, 1894.

Necropsy (*fourteen hours after death*).—Body medium size, strongly built. Post-mortem lividity on dependent parts. Rigor mortis. Teeth clenched on lower lip as if in pain. Eyelids closed; pupils dilated. Throat, pharynx, and trachea covered with thick, sticky mucus. Glottis œdematous. Both lungs œdematous and congested in parts. Weight of lungs: Left, 600 grams; right, 720 grams. Pericardium contained 500 c. c. fluid. Heart hypertrophied and dilated. Aortic and pulmonary valves normal. Mitral valve only represented by a bony or calcareous ring, in diameter about 1 cm. Tricuspid valve utterly incompetent. Weight of heart, 540 grams. Pleural cavity filled with fluid, about 1,000 c. c. Catarrhal inflammation of stomach, which was covered with mucus. Nutmeg or gin drinker's liver. Color brown. Weight, 1,290 grams. Gall bladder almost obliterated, and duct contained biliary calculus about the size of a large bean. Pancreas weighed 120 grams. Large white kidney; weight, 190 grams. Death from œdema of lungs and glottis, superinduced by tricuspid regurgitation and mitral stenosis.

CASE 9.

Cerebral hemorrhage.

C. L. (colored); aged 40 years; nativity, Maryland; admitted to the United States Marine Hospital, Baltimore, Md., February 16; died February 17, 1894.

History.—His illness began with "spasms" the day previous to his admittance to the hospital. During the day of entrance he had eight convulsions in rapid succession, and lost consciousness, which he never regained, dying the following day. He had an attack of facial paralysis eight years ago. On February 16, at 9 p. m., his pulse was 102 per minute and very weak; breathing labored and at times whistling in character; pupils minutely contracted, the left more than the right. Temperature 35.6° C. in axilla. Bladder contained about 75 c. c. of urine, which contained about 40 per cent of albumen. Had spells of dyspnœa about every ten minutes, each spell lasting about two minutes, the sterno-cleido-mastoid being rigidly contracted; also the muscles of the arm, especially the pronators. Patient died at 11 a. m. February 17, 1894.

Necropsy (*six hours after death*).—Rigor mortis marked. Arteries in an atheromatous condition. Brain tissue very soft and flabby. Entire brain was much congested. Right lateral ventricle filled with clotted blood (cerebral hemorrhage). There were old pleuritic adhesions on both sides of chest cavity. Left ventricle of heart much hypertrophied. Coronary arteries were atheromatous. The aortic valves contained plates of calcareous matter. Kidneys were lobulated and cortical portion contracted (chronic interstitial nephritis).

ORGANIC STRICTURE OF THE URETHRA.

CASE 1.

Septicæmia.

W. H. W.; aged 54 years; nativity, New York; admitted to marine ward, St. Francis Xavier's Infirmary, Charleston, S. C., March 22; died April 24, 1894.

History.—Patient was originally admitted for what was regarded as a strain of the muscles of the back. There was constant pain in the back, with slight tenderness of the muscles in lumbar region, aggravated by motion. The pain persisted and patient began to complain of frequency of micturition. The urethra was examined and three strictures of small caliber were found, two in the pendulous and one in the deep urethra. On April 15 patient was chloroformed and the two anterior strictures divided with Otis's urethrotome, and the deep stricture incised through the perineum. Antiseptic precautions were observed, the urethra irrigated before and after operation, and benzoic acid administered internally. The temperature rose in the evening after the operation, and fever, with brief remissions, steadily increased until patient's death nine days later.

Necropsy.—There was no attempt at repair in the perineal wound and its surface appeared necrotic. There was no inflammatory infiltration of the perineal tissues. Examination of the bladder showed that its walls were thickened and the mucous coat ulcerated. The kidneys, which were of normal size, were intensely congested and contained a large number of small hemorrhagic infarcts. The other organs were normal.

CASE 2.

Cystitis, chronic—Pyelonephritis.

F. P.; aged 33 years; nativity, Maine; admitted to the United States Marine Hospital, Portland, Me., by transfer from Bath, Me., March 17; died May 5, 1894.

History.—This seaman had been a patient at this hospital six years previous (March 21 to May 14, 1888) for the same disease, and was then treated by the writer. The treatment pursued was dilatation by metallic sounds, and he reported that in the period which had elapsed he had suffered no inconvenience in urination. About three months prior to admission he first noticed slight pains when passing water, and this was followed by an inability to retain it for any length of time, and was later troubled with involuntary urination at night. The urine became gradually foul in odor, dirty in appearance, and when he could not take care of himself longer he applied for relief at Bath, Me. Thence he was transferred to this hospital. Upon admission it was found that he was urinating every half hour and passing a dribbling stream of thick, foul urine, accompanied with a great deal of pain. He was given a bath, put to bed, and given a prescription containing belladonna, buchu, and uva ursi In a few days this treatment, aided occasionally with anodynes to secure rest, resulted in relief of the acute symptoms, and a system of gradual urethral dilatation was begun. It was necessary to commence with a No. 1, as the entire urethra seemed to be one continuous row of strictures. This plan was pursued as rapidly as consistent with the patient's condition and strength, as he was almost a physical weakling by birth and by reason of his disease, until a No. 9 was retained after entrance into the bladder. The condition of the urethra may be judged from the fact that after the sound was withdrawn it remained open for many minutes on account of its lack of resiliency. Upon completion of the dilatation to this point the patient took to his bed (April 30) and never arose from it. He complained of general weakness and loss of appetite. He had no further trouble with frequent or painful micturition. A sore throat developed, for which a local application sufficed. He had a severe abdominal pain during night of May 3, and this recurred the next night. He developed no symptoms of any organic disease, although growing weaker daily. His water became more pronouncedly offensive and showed sediment of pus and mucus. On the morning of May 5 he arose to sit on the stool, assisted by the night watchman, and after completing it was lifted back on the bed and immediately expired.

Necropsy.—The abdomen only was opened, and all the organs in the cavity appeared normal. The chief interest was located in the bladder, ureters, and kidneys. The bladder was contracted and thickened as to its internal coat. The ureters were evenly dilated, approximately 13 mm. in diameter, and filled with a thin, purulent fluid. The kidneys were almost completely broken down, with foci of suppuration and disintegration everywhere throughout the uriniferous tubular structure. Each measured about 10 cm. by 16 cm. The cortical structure was not more than 13 mm. thick in any part, and the pelvis, with the dilated and enlarged cavity thus formed, contained about 240 c. c. of a thin, purulent fluid.

This was a case of chronic pyelonephritis, which was the ultimate result of an attack of gonorrhœa and stricture acquired seven years prior to death. The stricture had produced a cystitis from back pressure, and this becoming chronic had invaded the ureters from the same mechanical process. In the same line the kidneys later felt the damming up of the urine and became diseased in turn. The process of breaking down was so gradual that no acute renal symptoms were ever noticed by the patient or made evident during the progress of his final illness.

CASE 3.

Pyonephrosis.

L. G.; aged 52 years; admitted to the marine ward, St. Vincent's Hospital, Portland, Oreg., April 25; died May 1, 1894.

History.—Nine years ago, after repeated attacks of gonorrhœa, he experienced the first symptoms of urethral stricture, and since then the stricture has been frequently operated upon for the relief of urinary retention. For the past three months he had suffered from incontinence, the urine dribbling and passing in drops, and at various times there was complete obstruction of the flow of urine. His appearance indicated a life of dissipation, and on questioning gave a syphilitic and alcoholic history, and that he had been drinking excessively the past week; and within the past four days had suffered from chills, fever, and malaise. His tongue was thickly furred; he had no appetite and his bowels were loose; stools thin and watery. He had a mild cough, with slight mucous expectoration; and auscultation of chest revealed harshness and a few moist rales. He also had some pain in his back, over region of kidneys. Patient was ordered a hot bath and then put to bed. The stricture was found to be deeply seated in the membranous portion of the urethra. Examination revealed several enlarged lacunæ, which being filled with filiform bougies, one bougie was finally passed into the bladder. This was followed by Thompson's dilator, and also by steel sounds (English scale) up to No. 10. A catheter was then introduced into the bladder and urine withdrawn, which was decidedly ammoniacal and contained traces of albumen and pus. The stricture was then further dilated until it readily admitted a No. 15. No anæsthetic was used, and patient complained of but little pain. A slight hemorrhage followed the sound, apparently from deep urethra. Patient rested comfortably until 2 p. m. (four hours after operation), when he had a decided chill, with severe muscular pains, lasting about one hour. His temperature chart showed the following: When admitted his temperature was 38° C., but at 2 p. m. next day it suddenly rose to 39.2° C., following severe chill (four and one-half hours after operation). Next morning it was 38.4° C.; evening same day 38.1° C. No change on fourth day; but on fifth day it rose to 40.2° C., and remained about the same until the evening of sixth day, when it fell to 39° C. On morning of seventh and last day it was about normal, and remained so up to the time of his death, at 3 p. m. At first his pulse was strong and full, but later it became weak and rapid, at times almost imperceptible at the wrist. Respirations were frequent and superficial. There was a low, muttering delirium two hours before death. Quinine, digitalis, and whisky were administered, but with little apparent effect.

Necropsy (*twenty hours after death*).—Height, 5 feet 9 inches; circumference at shoulders, 38 inches. Post-mortem lividity moderate. Rigor mortis marked. General nourishment fair. Pupils normal. Lungs showed hypostatic congestion; otherwise normal. Slight pleural adhesions to right side. Heart normal in size; somewhat flabby, and contained a small ante-mortem clot. Normal fluid in pericardial sac. Liver slightly enlarged; abnormally full of blood; tissue soft and friable; nutmeg appearance on section and mottled externally. Spleen enlarged and softened. Kidneys were somewhat congested and contained numerous foci of pus. The pelvis of right kidney contained pus and urine. The bladder wall was soft and thickened, the internal surface having a ribbed appearance, the so-called "columnar bladder." The penis and scrotum were slightly œdematous. The urethra showed in membranous portion the divided tissues of the stricture, and at this point there was slight extravasation of urine. Prostate gland normal. Opinion as to cause of death: Cysto-pyelitis and pyelo-nephritis, resulting from an old urethral stricture, with general pyæmic infection.

CASE 4.

Urethral calculi—Pyonephrosis—Chronic pachymeningitis.

J. C. T.; aged 43 years; nativity, Massachusetts; admitted to marine ward, St. Francis Xavier Infirmary, Charleston, S. C., February 2; died March 8, 1894.

History.—When admitted was suffering from partial retention of urine and distressing pain during micturition. The urine contained much pus. He stated that he had had difficulty in emptying his bladder for seventeen years. A stricture of small caliber was found 10 cm. from the meatus, and immediately behind it a small calculus. The scar of a former chancre was found on the glans Operation February 4. The stricture was divided, under chloroform, by internal urethrotomy, and the calculus, about 1 cm. in diameter, extracted by pressing it upward through the urethra. A second stricture in the membranous urethra was then discovered, and another calculus, behind it. This stricture was divided and the calculus removed through a perineal incision. This stone was much larger than the first and nearly filled the prostatic urethra. The bladder was explored by finger and sound through the perineal wound, but no more calculi were found. A catheter was tied in. Subsequent treatment consisted of antiseptic irrigation of bladder daily, the internal administration of salol, and supporting measures. The operation immediately relieved all distressing symptoms, but patient failed to improve. He continued to pass large quantities of pus in the urine. His behavior when admitted had been queer, and this was attributed to mild uræmia. He now gradually became delirious, and shortly before death could be restrained with difficulty.

Necropsy.—Body fairly nourished. Cellular tissue slightly œdematous. Thoracic organs normal, except a few pericardial adhesions which had evidently existed for a long time. The bladder was chronically inflamed, sacculated, and its muscular walls greatly thickened. Both ureters were dilated to three times their normal size. The kidneys were affected in the same way. The pelvis of each was dilated to the size of a lemon and contained a quantity of thick pus. A number of small abscesses were scattered through the kidney tissue. The latter was undergoing fibroid change. Brain: The dura, along the longitudinal fissure and over portions of the frontal lobes, was thickened and injected; behind the upper limit of the Rolandic fissure on the left side the dura and pia were adherent to the brain: similar adhesions were found at various points on the frontal lobes. The brain was otherwise normal.

URINARY FISTULA.

Tubercular pyonephrosis.

J. B.; aged 57 years; nativity, Ireland; admitted to the United States Marine Hospital, Chicago, Ill., December 7; died December 12, 1893.

History.—Was operated on at this hospital in 1874 for stricture of urethra. He had also at intervals been operated on for perineal abscess and fistulæ, which had formed at the seat of stricture. December 10, 1893, he was suffering from retention. The stricture was divulsed with Thompson's expander and a No. 29 bougie passed. The instruments were properly sterilized before using. The operation was followed by a chill and rise of temperature the same evening. Patient grew steadily worse, vomiting frequently, growing weaker, and died with urinary suppression December 12.

Necropsy (thirteen hours after death).—Post-mortem lividity and rigor mortis marked. Pupils dilated. The heart appeared extremely fatty and weighed 470 grams. The pericardial sac contained a small quantity of fluid. The right lung weighed 780 grams; the left lung, 870 grams. The pleural cavity contained adhesions and was lessened on account of abdominal ascites. The abdomen contained a large quantity of ascitic fluid; amount not measured. The small and large intestines were distended with gas. The liver was congested and weighed 2,140 grams. Gall bladder and ducts distended with bile. The kidneys were both congested. The left contained large tubercular cavities and a quantity of pus. The right kidney presented a rough, uneven surface of tubercular nodules. The right kidney weighed 170 grams; left, 220 grams. The bladder contained a small quantity of urine and showed evidences of cystitis. The spleen was congested and weighed 160 grams. Other organs not examined.

MULTIPLE INJURY.

Compound fracture of skull—Fracture of humerus and scald of the chest, upper and lower extremities.

D. G.; aged 32 years; nativity, Pennsylvania; admitted to the United States Marine Hospital, New Orleans, La., January 1; died January 3, 1894.

History.—On January 1 the patient, a fireman, was severely injured by the explosion of the "nigger" boiler aboard his boat. The entire front of his chest, thighs, upper extremities, neck, and face were severely scalded (second degree), and at the same time he sustained a simple fracture of the right humerus and two compound fractures of the skull, one just behind the left ear and the other through the right temple, about 4 cm. above and behind the external canthus of the right eye. He was rendered unconscious by the shock, but only remained so for a few minutes, and was able with the assistance of two men to walk to his bunk on the upper deck. He was brought at once to the hospital, but died from shock thirty-eight hours after the receipt of the injuries.

Necropsy (seven hours after death).—Rigor mortis marked. Body that of a magnificently developed and well-nourished mulatto. The epidermis was entirely removed from the front of his chest, thighs, upper extremities, neck, and face. A simple fracture was found through the surgical neck of the right humerus and two compound fractures of the skull (with no sign of compression) were found, as indicated above. The abdominal cavity contained about 200 c. c. of dark uncoagulated blood, while on the greater curvature of the stomach and about the center of the transverse mesocolon two large ecchymotic spots, evidently due to a violent blow, though no sign of one could be found on the surface, showed the probable seat of the hemorrhage. Abdominal and thoracic organs normal.

FRACTURE OF SKULL.

H. B.; aged 47 years; nativity, Germany; admitted to the United States Marine Hospital, Port Townsend, Wash., March 25; died March 26, 1894.

History.—About 2 o'clock of the afternoon that he was admitted, while in a drunken brawl, he received one or several blows with the tiller handle on the left side of the head, knocking him down and causing insensibility, from which he never rallied. He was kept on the boat until after 9 o'clock in the evening, and during this time was given a considerable amount of whisky. He was brought to the hospital in the evening by a policeman, and when admitted was in a comatose condition; breathing stertorous; pulse, 40; pupils not widely dilated; could not be aroused; every muscle perfectly limp; bladder enormously distended. The nose was badly contused and the cartilages torn loose from the nasal bones; both eyes were blackened; slight contusion over left eyebrow; laceration on left cheek; scratch on forehead; swelling over left temporal region. There was no paralysis. The bladder was emptied and the patient made comfortable. He died at 2 o'clock in the morning.

Necropsy (*twelve hours after death*).—Body of a well-nourished white man, 5 feet 2 inches high. Rigor mortis well marked. The lungs and heart were normal. The abdominal cavity was opened and the organs found to be normal. The cranium was opened in the usual manner. The scalp on the top of the head and in the temporal region was badly contused, and there was considerable clotted blood in the connective tissue. On removing the calvarium a large clot of blood, about 5 inches in length, 4 inches wide, and 1 inch thick, occupied the region immediately over and around the parietal lobe, but lying on the outside of the dura. The membranes of the brain were not ruptured. On removing the meninges a clot about the size of a 50-cent piece was found on the anterior surface of the frontal lobe. Left hemisphere congested. The skull was fractured in the following manner: The coronal suture was separated on the left side, and the fracture continued through the squamous portion of the temporal bone to the base of the skull; the separation continued across the sagittal for an inch, into the right coronal suture; another fracture extended from the coronal, near the sagittal on the left side, backward for 2 inches, connecting with an oblique fracture which commenced in the coronal suture about an inch to the right of the sagittal; the middle meningeal artery was ruptured on the left side.

MULTIPLE FRACTURE OF SKULL.

J. M.; aged 22 years; admitted to the United States Marine Hospital, Boston, Mass., November 4; died November 5, 1893.

History.—When admitted patient could walk and talk; asked for a glass of water and complained of headache; wandered somewhat in speech. Captain of vessel stated that the man was struck on the head by a boom and knocked down; became unconscious and remained so for about one hour. This occurred forty-eight hours previous to admission. At time of admission pupils were normal. There was very slight external evidence of injury. After being placed in bed an ice cap was applied to head and several drops of croton oil placed on back of tongue. He very soon became delirious and unconscious. At this time the left pupil was somewhat dilated, right normal. Left arm and leg became paralyzed; pulse slow and full; respiration stertorous and of the Cheyne-Stokes type. Blood was taken from the temporal artery; urine drawn by catheter. These measures seemed to afford him some relief Died eight hours after admission.

Necropsy.—Body that of strongly built, muscular male. Froth oozing from mouth and nostrils. Post-mortem discoloration on face, neck, and chest. Infraorbital subconjunctival ecchymosis on left side. Head had normal appearance. Upon turning back scalp, an effusion of blood was found over entire vertex of skull. Upon opening the skull both middle meningeal arteries were found to be ruptured, causing considerable hemorrhage under temporal and parietal bones on both sides. Brain substance was extensively lacerated over ascending frontal and parietal lobes, right side. Brain substance softened over space of 6 cm., extending above and below fissure of Sylvius and into the fissure of Rolando on right side. On the left side, at about the same region, two small lacerations were located. The skull was fractured in eight places, or rather the fractures extended through seven bones. Beginning at the left supraorbital notch, a fracture extended diagonally across frontal bone to coronal suture, which it followed to greater wing of the sphenoid, at which point the line of fracture divided into two, one arm making an acute angle and crossing right temporal bone, producing some comminution; the other arm continued through the greater wing of the sphenoid, crossing the lesser wing, and through the ethmoid back to the point of origin of fracture in frontal bone. The coronal suture was followed by a line of fracture throughout its entire extent. Passing down the left side of skull, it pursued a course similar to that on opposite side. The squamous portion of the temporal bone was fractured, but the skull in this vicinity did not suffer the comminution which the opposite side sustained. The line of fracture, similar to that of opposite side, entered greater wing of sphenoid, and at a more acute angle crossed the lesser wing and traversed the orbital plate of the frontal to the original point of fracture in the orbit. Thus the frontal, in two places, two parietals, and two temporal bones of the vault were fractured. Fracture passing to right included the ethmoid and both wings of sphenoid; the one to the left both wings of sphenoid at base.

FISSURED FRACTURE VAULT OF SKULL—RUPTURE OF RIGHT LATERAL SINUS.

J. C.; aged 22 years; nativity, Virginia; admitted to the United States Marine Hospital, Cairo, Ill., January 22; died January 22, 1894.

History.—He was admitted to hospital at 7.05 a. m. in an unconscious condition. He was said to have been struck on back of head with a spade. There was profuse hemorrhage from mouth and nose. There was a large crescentic cut over left eye, said to have been made by falling on a piece of iron. The hair was saturated with blood. There was no external evidence of depression of skull. Respirations ten per minute and stertorous. Heart rapid and feeble. A few moist rales on left side of chest; otherwise thoracic viscera were normal. No indication of disease of abdominal organs. A hypodermic injection of camphor and ether stimulated respiration and heart for a short time, but gradually respiration failed and stopped some minutes before the heart ceased to beat. Death occurred at 8.20 a. m.

Necropsy (six hours after death).—Body excellently well nourished. Rigor mortis marked. In removing the calvarium a large quantity of blood escaped. The dura mater was adherent along both sides of the longitudinal fissure, and at points of adherence seemed to have undergone cicatricial contraction. The inferior longitudinal sinus was obliterated, and in its course were found two calcarous masses the size of large beans. The right side of the brain was covered with dark grumous blood, and there were several large clots. A much smaller quantity was on left side. A fracture, beginning about 3 cm. from the posterior superior angle of left parietal bone, extended across the occipital bone 2 cm. below the superior angle to the right lambdoid suture. This suture was separated down to the point of junction of the right parietal and temporal bones with the occipital. From this point the fracture extended across the petrous portion of temporal bone into the squamous portion, stopping just before it reached the greater wing of the sphenoid. The copious hemorrhage would be accounted for by rupture of the lateral sinus. The interior of the brain was apparently normal. No other organs were examined.

FRACTURE OF THIRD AND FOURTH CERVICAL VERTEBRÆ.

P. K.; aged 37 years; nativity, United States; admitted to the United States Marine Hospital, Chicago, Ill., July 5; died July 6, 1893.

History.—On night of July 4, 1893, fell through a hatchway, striking on head and shoulders; was brought to hospital by police patrol in an unconscious condition, in which state he remained until he died, the next day, at 3 o'clock a. m.

Necropsy (eight hours after death).—Rigor mortis well marked. Body well nourished. Pupils dilated. Had an abrasion on right knee, probably forty-eight hours old. Slight contusion over crest of ileum, on right side, just above anterior superior spinous process. Head and neck much congested. Marked suggillation posteriorly, extending all along the body. Heart normal; weight, 320 grams. Lungs deeply congested; left weighed 670 grams; old pleuritic adhesions posteriorly; right weighed

730 grams. Liver: Increased connective tissue; color light; weight, 1,970 grams. Kidneys: Increased connective tissue and congested; weight. right 160 grams, left 180 grams. Spleen soft and congested; color dark; weight, 210 grams. Scalp appeared to be normal, but on cutting through it considerable fluid blood escaped. Skull normal. Membranes normal. Brain congested, but otherwise normal in appearance; weight, 1,270 grams. The third and fourth cervical vertebræ were found to be fractured, the fracture extending through the laminæ of both vertebræ. The spinous process of the fourth was also fractured.

CANCER OF STOMACH.

Case 1.

T. P.; aged 45 years; nativity, Sweden; admitted to the United States Marine Hospital, San Francisco, Cal., August 20; died August 29, 1893, at 1.25 o clock a. m.

History.—On admittance patient complained of a severe, continuous pain in epigastrium and expectoration of blood. Pain is relieved by pressure. Said that when he partook of food the pain was rendered intense. Had acid eructations very often. Had been ill ten months. Stomach inspection negative. Palpation: Pain on pressure just below and to the left of the ensiform appendix. No tumor could be felt. Percussion negative. Lungs normal. Heart sounds weak, but no murmur. Liver area seemed slightly diminished in vertical line. Patient was very anæmic. On August 26 had an attack of hæmatemesis and vomited about 250 c. c. of bright arterial blood. On August 27 he had two attacks of hæmatemesis, and lost about 500 c. c. of blood in all. On evening of August 29 patient was attacked by severe gastric pain, which continued up to the time of his death.

Necropsy.—Body very anæmic. Rigor mortis well marked. No discoloration of body. Lungs healthy. Heart: Valves competent; cavities empty. Stomach very slightly dilated; perforation of posterior wall, about 2 cm. in diameter, just below and to the right of œsophageal orifice. Cavity of stomach filled with coagulated blood. Glandular carcinoma, in state of advanced ulceration, occupied superior curvature and upper portions of anterior and posterior walls, midway between pyloric and œsophageal orifice. Posterior wall was chiefly affected; edges of ulcer were indurated and everted; base was hard and irregular. Considerable blood found in intestine. Liver weighed 1,450 grams; appeared healthy. Viscera were almost exsanguinated.

Case 2.

C. E.; aged 57 years; nativity, Maryland; admitted to the United States Marine Hospital, Memphis, Tenn., February 7; died February 22, 1894.

History.—On admission to the hospital the patient gave a history of having been taken sick some two months before with disturbance of the stomach and inability to retain solids or liquids. He had been drinking heavily, and the disturbance of the stomach came on somewhat suddenly. He had evidently lost much flesh. He did not complain of pain in the stomach, and there was no tenderness to be found. The vomited matter appeared to consist of what had been swallowed, together with some mucus. The bowels were constipated. Toward the last feeding by rectum was tried, but without effect in staying the progressive failure of strength. The pulse was very weak and thready in the last days, but no affection of the heart was suspected.

Necropsy (*seven and one-quarter hours after death*).—Slight post-mortem lividity on the back and the extremities. Rigor mortis absent. The general nourishment seemed fair, but the extremely lax and sunken condition of the abdominal walls and the wide spread of the lower part of the chest showed that the man had been very pursy and had lost greatly in flesh. The subcutaneous tissue and the great omentum still contained considerable fat. Of the pupils, the left was natural and the right a little dilated. The heart weighed 369 grams. The pericardial sac contained some dark, purulent liquid. The pericardium was much injected, particularly about the base of the heart. On the left ventricle, in a space extending from the apex upward and behind, was a thickening of the tissues, or a growth resembling granulation tissue. There were no adhesions in the sac. The valves of the heart were all competent. The aortic, pulmonary, and tricuspid valves were thickened, and some small vegetations were found on the aortic and the tricuspid. The wall of the left ventricle was hypertrophied; that of the right was thin and flabby. The lungs were much congested; the right one more so than the left. The left lung weighed 314 grams; the right, 487 grams. The pluræ were free from inflammation and adhesions. About the cardiac orifice of the stomach and firmly attached to the diaphragm was a hard, inelastic ring of tissue, evidently cancerous. Several lymphatic glands situated near it were indurated and as big as chestnuts. The cardiac orifice of the stomach was constricted so that the tip of the forefinger could barely be forced into it, and the finger could not be forced through it. No ulceration of the scirrhous mass was found, and the mucous membrane of the stomach was not unhealthy. The stomach was shrunken and almost entirely empty. The large intestine, from one end to the other, contained numbers of small lumps of hardened fæces. The liver was small, firm, and mottled in color, and the acini were not as distinguishable as usual on its cut surface. Its weight was 1,490 grams. The gall bladder was full of bile. The left kidney weighed 146 grams; the right, 141 grams. Both were normal in gross appearance. The spleen weighed 177 grams, and its tissue was unusually firm.

This case was a very interesting one. The affection of the pericardium and heart was undoubtedly cancerous, caused not by incorporation of the tissues, but by infection from contiguity; and it must have been the direct cause of death, since the presence of fat in the body showed that death could not have resulted from starvation, and the growth in the stomach was not far advanced.

CANCER OF STOMACH AND PANCREAS—ANEURISM OF THORACIC AORTA.

J. W.; aged 60 years; nativity, United States; admitted to the United States Marine Hospital, San Francisco, Cal., July 15; died September 14, 1893, at 7.45 p. m.

History.—On admission he complained of dropsy, which condition had been present for two weeks, frequent urination, pain in back, dyspnœa, and severe attacks of dyspepsia. Said he had been unwell for about one year. He vomited frequently, the vomited matter consisting of undigested food, mucus, and small amount of blood. He sometimes had very acute attacks of pain in epigastrium. Ankles, legs, and lower eyelids were œdematous. Heart's action regular. Some hypertrophy. Aortic diastolic murmur. Pain on pressure over epigastrium. Urine loaded with albumen. For a while the patient became better, the œdema and dyspnœa being relieved and the vomiting allayed. Emaciation was progressive, and about two weeks previous to death he suffered from severe vomiting, dyspnœa, dysphagia, and obstinate constipation. The conditions named were intractable to treatment, and he died September 14, 1893, at 7.45 p. m.

Necropsy (eighteen hours after death).—Rigor mortis marked. Subject emaciated and lower extremities œdematous. Costal cartilages were ossified. Hydrothorax present. About 750 c. c. fluid in left pleural cavity, and 1,000 c. c. in right pleural cavity. A few adhesions were encountered in the left lung. Lower lobe presented appearances of a lobar pneumonia in stage of gray hepatization. A few pleuritic adhesions in the right lung. Lower lobe was also pneumonic, but much worse than lower lobe of left lung. Considerable pus was present. Heart: Fluid in pericardial sac, about 100 c. c. in quantity; some hypertrophy of left ventricle; aortic valve incompetent; mitral valve competent; endarteritis and calcification in arch of aorta. A fusiform aneurism, beginning at sinus magnus on ascending portion of arch of aorta and extending to diaphraghm, was found. Posterior wall of aneurism was wanting. The fifth, sixth, seventh, and eighth dorsal vertebræ were eroded, and the eroded surfaces formed posterior wall of aneurism. The sac was filled with a laminated blood clot. The aneurism had not ruptured. Lymph glands in omentum much enlarged. Stomach was adherent to spinal column and diaphraghm. Large scirrhous carcinoma was found, involving nearly all of pancreas and posterior wall, as well as lesser curvature of stomach. The cardiac orifice was nearly totally occluded by the growth. The growth was adherent to abdominal aorta and almost encircled it. The stomach was small; several small ulcers found. One ulcer on posterior wall had nearly perforated stomach, as the peritoneal coat formed floor of ulcer. Gall bladder was dilated and had a capacity of about 350 c. c.; contained large quantity of dark viscid bile. The sac had ruptured, as a large quantity of bile was found in peritoneal cavity. The malignant growth had encroached on and occluded common bile duct. The liver was tough and leathery on section and very light in color. Spleen was very small. Kidneys presented appearance of a subacute parenchymatous nephritis.

CANCER OF OMENTUM.

J. A.; aged 32 years; nativity, Norway; admitted to the United States Marine Hospital, San Francisco, Cal., March 2; died April 29, 1894, at 6:30 o'clock p. m.

History.—On admittance patient complained of intense pain in the back and over the abdomen. The abdominal cavity was distended with fluid. The patient passed dark, bloody urine. A provisional diagnosis of Bright's disease was made. Two days after coming in dyspnœa ensued from pressure of the ascites, necessitating paracentesis abdominalis. On palpating the abdomen a hard, nodulated tumor of irregular outline could be plainly felt. The larger portion of the tumor mass was in the upper half of the umbilical region and extended also into the epigastric and right lumbar and hypochondriac regions. The succeeding history was one of frequent tappings, increasing doses of anodynes, and rapid emaciation.

Necropsy (seventeen hours after death).—Body extremely emaciated. Post-mortem rigidity, but no lividity. On opening the peritoneal sac a large fungoid growth, occupying the situation for the omentum, but overspreading the omental bounds, was disclosed. The tumor was more or less adherent by spongy outgrowths to the parietal reflections of the peritoneum and to the entire visceral coverings from the cardiac orifice of the stomach to the rectum, including also the liver, pancreas, kidneys, and spleen. The walls of the pyloric orifice of the stomach were greatly thickened with a dense, white, new tissue formation. Scattering patches of the parietal layer of peritoneum were much thickened and indurated, especially on the diaphragm and below the level of the umbilicus. The liver, pancreas, spleen, and kidneys when divested of their peritoneal coat appeared healthy. Microscopic examination of the tumor showed it to be of the alveolar type of the carcinomata. The alveoli are large and distinct and contain irregular groups of epithelial cells, mostly spherical, some fusiform and nucleated.

CANCER OF BLADDER—PYÆMIA.

M. G.; aged 38 years; nativity, Connecticut; admitted to the United States Marine Hospital, Chicago, Ill., June 10; died August 19, 1893.

History.—For several years had suffered from stricture of urethra, and shortly before admission had developed perineal abscess, which was followed by a urinary fistula and catarrh of the bladder. Was operated on for the fistula by perineal section, but grew steadily worse and finally died of pyæmia.

Necropsy (fifteen hours after death).—Lividity and rigor mortis marked. Body well nourished. Pericardial sac contained about 30 c. c. fluid. Heart normal in size; valves competent; had a fibrous patch on wall of right ventricle. The heart contained ante-mortem clots. Lungs: Left weighed 770 grams; right, 970 grams. Numerous small metastatic abscesses scattered throughout both lungs. Liver slightly fatty, enlarged, syphilitic; contained numerous metastatic abscesses; weight, 3,330 grams. Kidneys: Left, weight, 330 grams; small cyst on posterior upper aspect; right, weight, 310 grams. Both organs were the seat of chronic nephritis and contained small abscesses. Bladder, weight, 870 grams. A carcinoma involved the whole superior posterior aspect of the bladder and adjoining tissues. It contained a large cavity 9 by 5 cm. in diameter. The walls of the cavity were stained with blood and contained a small amount of pus and débris. Brain normal; weight, 1,570 grams. Other organs not examined.

CONTRIBUTED ARTICLES.

CONTRIBUTED ARTICLES.

The following reports of special cases have been received:

A CASE PRESENTING PECULIAR SUSCEPTIBILITY TO THE ACTION OF CANNABIS INDICA, ADMINISTERED FOR NEURALGIA.—RECOVERY.

By HENRY W. SAWTELLE, Surgeon, United States Marine-Hospital Service.

The physiological effects of cannabis indica, observed after the administration of the drug in small doses, with the clinical history of a case in which the symptoms were similar to those produced by hasheesh, may possibly be of interest to some as an illustration of the susceptibility of some patients to certain drugs. This peculiarity or idiosyncrasy is noticed occasionally in practice, and emphasizes the necessity of caution in the exhibition of medicines, especially new preparations or uncertain remedies. In this case the patient was under treatment for a severe occipital neuralgia, which was finally relieved by hemp after trying unsuccessfully many other remedies recommended in such cases. The literature of therapeutics in general shows that the preparations of hemp, especially the American variety, are very uncertain, and experience teaches that Indian hemp is the more reliable and should always be preferred. The case referred to was that of a well-developed seaman, aged 33 years, a native of Canada, admitted to the United States Marine-Hospital, Boston, September 20, 1893. The patient stated that he had been subject to similar attacks of neuralgia before. A blister to back of neck and antipyrine were ordered. Arsenic, opium (in form of Dover's powder), and gelsemium were given in turn without relief. In fact, the patient grew weaker rapidly. Iron, quinine, and strychnine were ordered. Morphia, hypodermically, at intervals, relieved the pain temporarily. As there was no specific history, potassium iodide was not given. On the morning of October 2, 1893, after a very restless night, the patient was extremely weak and unable to leave his bed. All treatment having failed to give relief, the administration of the fluid extract of cannabis indica was determined upon in doses of 5 drops. Five doses were given. The case was under the care of the interne, Dr. E. B. Stone, who carefully noted the symptoms. Upon visiting the patient October 2, at 8 p. m., his condition was as follows: Neuralgia relieved and the patient in a state of increased mental and motor activity, which was soon followed by partial delirium and hallucinations. Pupils were dilated. The hallucinations were of a jovial character, the patient being naturally of a jovial disposition. It has been observed by different authorities that the form of the hallucinations in these cases represents the mental and moral condition of the individual in his normal state. In this instance the patient talked freely and pleasantly, and when relating some incident he would burst into laughter. He first claimed the ceiling was falling, which he tried to support by extending his arms, and called loudly for help. Moved his bed to the opposite side of ward, and he imagined he saw pieces of timber floating in space about him. He left his bed and went to a corner of the ward, and became intensely excited over what he took to be a dog fight between a large and small dog. He watched the imaginary fight for a few moments; then returned to bed and remarked that the large dog had torn the small one into pieces, and expressed sympathy for the small dog. At first he attempted to leave the ward through a window, and it was necessary to restrain him. The symptoms described continued three days. From the first the pulse was full and strong respiration normal. During the night he was troubled with erections of the penis. This drug has been regarded as an aphrodisiac, but Brunton says that the trials of it made in England "seem to show that it does not itself at least have any such action, and merely induces a condition of partial delirium in which Easterns may possibly have visions of a sexual nature, and, indeed, they try to give a sexual direction to the mental disturbance which the cannabis produces by mixing with it musk, ambergris, or cantharides." Bartholow remarks that aphrodisiac effects are said to follow the use of hasheesh; but impotence, which is common in hasheesh eaters, doubtless results from the repeated overstimulation of the sexual organs.[1] Dr. Edes reports that he ordered it for a long-continued headache without benefit, but the patient ceased to suffer from "the bad dreams that had previously annoyed her." Acting upon this hint, he adds, it was given to several others who had made similar complaints, with similar results; that is, the character of the dreams changed and became agreeable. The effect of the drug in reference to this particular complaint was not ascertained, as the patient referred to in this article had not suffered from troublesome dreams. There was slight anæsthesia of the lower extremities—and patient complained of weakness of legs for several days after effects of drug had passed off. No bad symptoms followed the use of the drug; appetite good from the first. During the first night he was unable to sleep at all, though chloral hydrate and potassium bromide were given in full doses at evening visit, and later morphine sulphate, $\frac{1}{4}$ gr. (0.016 gm.). The second night chloral hydrate, 25 gr. (1.62 gms.) and bromide potassium, 40 gr. (2.60 gms.), in two doses, at intervals of four hours, were ordered at the evening visit and later $\frac{1}{100}$ gr. (0.00065 gm.) hyoscine, hypodermically, after which the patient slept about an hour. He slept well during the third night without hypnotics, and continued to sleep soundly until the effects of the drug had entirely disappeared. The patient regained strength rapidly, and was discharged October 25, 1893, entirely recovered.

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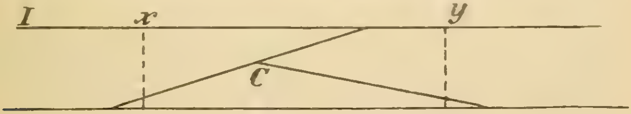
[1] Vide Boston Medical and Surgical Journal, September 14, 1893, page 273.

COMPOUND FRACTURE OF TIBIA—SIMPLE FRACTURE OF FIBULA—RECOVERY.

By HENRY W SAWTELLE, Surgeon, United States Marine-Hospital Service.

J D.; aged 30 years; nativity, Newfoundland; admitted to the United States Marine Hospital, port of Boston, January 26, 1892.

The patient stated that, while walking on the street a few hours before admission, he slipped and on falling injured his right leg. Upon examination a fracture of both bones, right leg, lower third, was found. The tibia was exposed through a small opening, and there was a severe bruise and extravasation of blood about the point of injury. The wound was properly cleansed, the fractured bones were reduced, and the leg was dressed antiseptically and put up in plaster bandage. But high temperature following, the patient was anæsthetized and wound freely opened and cleansed, and posterior felt splint applied. The wound was dressed daily, and on February 12 was again put up in plaster bandage and a window cut over fractured tibia. On February 17, there being some displacement of the fragments, the patient was etherized and the opening on tibial side of leg enlarged, and oblique fractures of the tibia were revealed, as shown by the accompanying diagram:



The fibula had united. The fragment of bone *c*, about 4 inches long and 1 inch wide, was removed. The ends of the bone were sawed off to the extent of a quarter of an inch at *x* and *y* and brought together with silver wire. Great care was exercised in preserving the periosteum intact as far as possible. With the exception of the second and third days after the operation, there was no rise of temperature. The wound was dressed antiseptically. The bone, which was merely a shell, failed to unite; the wire was removed on March 20 and a plaster cast applied. On April 13 the bandage was removed; wound carefully examined and found in good condition, with new bone forming. Fresh plaster bandage was applied. June 1 this bandage was removed and massage ordered until June 16. June 19 a sequestrum of bone about three-fourths of the circumference of the tibia and 1 inch in length was removed from lower fragment. July 28 two sequestra from upper portion of tibia removed. The larger of these was an inch and a half long by about one-fourth of an inch wide. By October 25 the wound was healed, and on the 30th of December the patient was discharged, recovered, and in a few months went to sea, his leg being strong enough to enable him to resume the occupation of fishing. This sailor was recently lost at sea, a little over a year after he left the hospital.

COMPOUND FRACTURE OF VAULT OF SKULL, ACROSS LONGITUDINAL SINUS, WITH DEPRESSION—REMOVAL OF FRAGMENTS—ELEVATION—RECOVERY.

By Charles R. Robins, M. D., interne, service of Surgeon Sawtelle.

Seaman, J. J.; aged 24 years; nativity, Norway; admitted to the United States Marine Hospital, port of Boston, Mass., May 30, 1894.

The patient stated that on the previous night he had fallen a distance of 30 feet, cutting a gash in the back of his scalp about 10 cm. long. A physician was sent for, who closed the wound by silk sutures. After sustaining the injury the patient remained unconscious for about six hours. He complained of feeling bruised and sore over the whole body, especially in his back. Palpation revealed what appeared to be a depression corresponding to the wound. The patient walked some distance to the hospital, and was able to give a clear account of himself.

Turpentine stupes were ordered for his back, and aconite was prescribed in drop doses to control circulation and prevent inflammation.

May 30, 12 o'clock midnight.—Found pulse intermitting, so stopped aconite.

May 31, 6 p. m.—Pulse intermitting every fourth beat and very slow. Temperature 39° C. Prescribed strychnine and digitalis.

May 31, 9 p. m.—Condition growing worse. Examination of wound showed a considerable collection of fluid. Opened with probe and evacuated a considerable quantity of blood that was beginning to turn to pus. Ordered ice bag to head.

June 1, 9 a. m.—Condition of patient not improved. Complained that vision was affected so that he could not see well. In a half stupor and continued to grow duller. Pulse intermitting. Temperature, 38° C.

June 1.—Surgeon Sawtelle examined the case and opened up wound thoroughly and cleansed with bichloride solution. Considerable fluid evacuated. Examination with finger in wound showed a depressed fracture. Both pupils dilated and did not respond to light. It was determined to open up the scalp well and make an effort to elevate the fragment of bone.

Patient was taken to operation room on stretcher at 10.30 a. m. Ether administered after a hypodermic of morphia and atropia. He went under the anæsthetic well. The scalp was shaved in the vicinity of the wound and cleansed antiseptically. An incision corresponding to the original cut was made, and then another at right angles to this, extending over the site of the depression. The scalp was reflected back, together with the periosteum, and the fracture clearly revealed. It was shown that the point of violence was just above the external occipital protuberance, the depression here being fully 8 mm. From this point, corresponding to the apex of a triangle, two lines of fracture, corresponding to the sides, extended, one upward for 4 cm., exactly over the longitudinal sinus, and the other outward 5 cm., just above the right lateral sinus. The base of the triangle was represented by a jagged crack, produced by the bone being bent there and not depressed. Connecting with this depression at the apex was a nondepressed split extending outward over the left lateral sinus for 2.5 cm. The affection of vision was accounted for by the depressed bone compressing the occipital lobe, which is the center of vision. The proximity to the sinuses made the locality so dangerous that trephining was precluded, and necessity for the most cautious and delicate measures indicated. In order to be able to elevate, it was necessary to remove the rough edge of the nondepressed bone that had caught the depressed portion and held it firmly down. This was done by means of the bone forceps and chisel. Two crushed fragments of bone were found in the line of fracture that were pressing on the brain. These were removed.

It was found also that a small portion of the inner table of the skull had been splintered off here, but it was thought best to let it remain undisturbed, as its removal might possibly open up the sinus. The triangular piece of bone was then elevated, and the elevator inserted under the bone showed all pressure relieved. The wound was then cleansed with bichloride solution, a rubber drainage tube inserted, and the wound sutured with silk. The periosteum was brought back carefully with the flaps. Wound was dressed with bichloride gauze, bandaged, and patient taken to his bed on stretcher. He stood ether well.

June 1, 3 p. m.—Called by nurse to patient, who complained of being cold. Ordered hot bottles to feet and gave hypodermic of strychnine. Pulse regular and as good as could be expected. General condition good. No nausea.

June 1, 6 p. m.—Pulse slow, but strong. Condition good; has been sleeping during the day.

June 2, 9 a. m.—Pulse 42, but regular. General condition good. No nausea. Pupils nearly normal and respond to light. Did not sleep well during the night. Redressed head and found considerable discharge, but draining well.

June 2, - p. m.—Feeling quite comfortable all day, but head slightly sore this evening.

June 2, 6 p. m.—Ordered chloral and potassium bromide for sleeplessness.

June 3, 9 a. m.—Slept fairly well last night. Appears very bright; stupor entirely gone. Head feels slightly sore. Opened bowels with calomel.

June 4, 6 p. m.—Says his sight is improving greatly. Is not hungry, but takes all of his milk.

June 5, 9 a. m.—Continues to improve. Pulse regular, but very slow, being 48.

June 6, 9 a. m.—Took out stitches. Edges of wound healed by first intention and wound doing well; only slight discharge. General condition improving rapidly.

June 8, 9 a. m.—Pulse 72. Still improving.

June 15, 9 a. m.—Took out drainage tube entirely yesterday; but as there appears to be a tendency to accumulation of discharge, it was replaced.

June 25, 9 a. m.—Took out last small piece of drainage; had been shortening it gradually.

June 26.—Patient discharged entirely recovered. Vision as good as ever before.

After the operation this patient made an uneventful recovery. The wound was dressed every day until it had entirely healed. Drainage tube was kept in order to prevent any tendency for the dura to become infected.

Two points of especial interest in this case are its situation in reference to the sinuses, and the affection of vision, caused by compression of the center of vision, which was entirely relieved when the compression was removed.

AMYOTROPHIC LATERAL SCLEROSIS, WITH REPORT OF A CASE.

By W. P. McIntosh, Passed Assistant Surgeon, Marine-Hospital Service.

M. C.; aged 51; nativity, Ireland; sailor.

No history of syphilis. General health good. Occasionally used alcohol to excess. About four years ago he had a fall, after which he could not sit down or assume sitting position long at a time on account of pain in back. He could walk, stand, or lie down without pain, but after sitting a short time this pain became so severe as to be unbearable. His work allowed him to stand; he therefore continued on duty. On February 21, 1893, while under the influence of alcoholics, he sustained a fall of 10 feet distance, striking a hard floor with his back and shoulders. This was early in the night, and he lay as he had fallen until next morning. When he awoke he could not rise. In his own words, "My legs felt as if they were not my legs; there was no feeling in them, nor could I move them." The left arm was also paretic, owing to fracture of acromion and contusion of nerve. The face, left arm, and leg were contused. The pupils were normal. The eyelids, lips, tongue, and soft palate gave no evidence of paralysis of cerebral origin. The ankle clonus, patella reflex, cremasteric reflex, all absent. Sensation in the lower extremities also suspended. Sphincters of bladder and rectum normal. No bone lesion of spine. These symptoms would seem to indicate pressure on cord, resulting in flaccid paralysis and a break in reflex arc. We know that the cord may be compressed for a long time without causing any appreciable change. But in this case, when neither the reflex arc is destroyed nor cord destroyed in its entire diameter, the result must be spastic and not flaccid paraplegia.

The fact that this man was devoid of cutaneous sensibility, with loss of motive power in lower extremities, would indicate pressure on cord. Coming on suddenly without bone lesion leads to the belief that an effusion was cause of pressure. The absence of reflex phenomena would further indicate that lesion was either of anterior horns or posterior external columns in lumbar or lumbo-dorsal region. The loss of sensation in legs would point to latter region. After remaining in hospital about six weeks, during which time hot packs and mild current of electricity were used, he regained the sense of feeling as well as power of motion to a considerable extent. This would tend to show that effusion had been to a great extent absorbed. A week later he tried to walk. This effort cost him two months in bed, during which time sensation was good, and has so remained. But motion is greatly impaired. Atrophy of muscles of forearm and hand, and to a less extent those of leg, took place. There was not nor has there been any trouble with sphincters of bladder or rectum. But, owing probably to paresis of muscles of abdomen, he has not the power to force water from bladder, this viscus emptying itself when full. The rectum acts somewhat in the same way. He suffers greatly from constipation, no doubt caused by his confinement in bed; but when peristalsis is stimulated by cathartics or enemata he can not control till rectum is empty.

No tendency to bed sores. At the end of period mentioned he began to improve again. After the lapse of six months the patella tendon reflex, plantar reflex, and ankle clonus gradually returned, and then became greatly exaggerated. The cremasteric reflex is still absent, as is the abdominal. The muscles of both upper and lower extremities became hard and stiff. When leg was straight and he was told to exert his power, it required great force to flex it; when flexed, with instructions to hold it so, great strength to extend it. Spastic tendons. The muscles of arm contracted to an extent that caused fingers to become flexed on hand. The fingers became clubbed at end and red at point. This, with contractures, give the hands the appearance of claws, which they still retain. The hand can be closed further, but not opened. The grip or squeeze is very weak. He complained for a long time of a feeling of coldness in his legs, though skin felt warm to touch. He still suffers occasionally in this way. Application of snow to skin causes feelings of burning, smarting pain, as if hot iron had been placed in contact with skin, causing patient to start and cry out. He is unable to raise arms above head, as he says the skin on his sides and under arms feels as if it were drawing up sides and tearing, causing so much pain as to lead him to desist (paralysis of chest muscles?). In trying to walk or stand he places feet close together, and walks with a dragging, shuffling gait, placing weight on center of foot—flat-footed shuffle. Soon loses control of legs from spastic contractures, jerking of reflexes, shaking of foot, tremor, etc.

There are at present no sensory disturbances. In fact, no pain has been present at any time, except that a feeling of a cord around waist gives pain, and dragging, shooting pain in chest when he sneezes, which he does pretty often. For eleven months after injury this man had no erections of penis. After this when he lay on his left side he invariably had erections. On several occasions he has experienced chilly sensations, and on one occasion chill was followed by fever of 40° C. Except for a tendency to laugh very readily, if such be a symptom at all, with credulity and emotional excitability, the psychic disturbances noted by P. Marie,[1] of Paris, as being characteristic of amyotrophic lateral sclerosis are not noticeable. In fact, in the six or eight cases I have observed psychic disturbances were exceptional. The French, though a brave and courteous people, are exceedingly emotional as well as credulous, and their mental equilibrium is more readily disturbed. This must account for Marie's observations.

Placing the disease under discussion in its proper place as a primary systematic lesion, which means, to borrow the expression of Vulpian, the lesions which settle in and circumscribe certain well-defined regions without encroaching on neighboring ones, for "there yet exists a considerable number of pathological states, evidently situated in the nervous system, which leave no material appreciable trace on the cadaver, or reveal them at most by the minutest lesions, without determinate character, incapable in any case to explain the principal facts in the morbid drama."[2] Tetanus and hydrophobia, true epilepsy, paralysis agitans, inveterate hysteria, and chorea, the "antique group of neuroses," though studied with success on several points, are still practically inaccessible to the anatomico-pathologist, and which exhibit themselves as so many Sphinxes which defy the most penetrating anatomy. It is a well-ascertained fact that the form of trouble under discussion is a secondary descending degeneration of either cerebral or spinal origin. If of cerebral origin, the lesion or foci must be in the Rolandic area, or, to be more exact, according to Flechsig, and more recently Charcot, the posterior segment—lenticulo optic—of the capsule. Divide the segment into three parts and the anterior two-thirds could not sustain a destructive lesion even of small extent without being followed by a descending degeneration of the corresponding pyramidal fasciculus, since the nervous fibers which traverse it seem to be a direct emanation from the pyramidal fasciculi. A destructive lesion in the cord at point of these white fasciculi would also produce a degeneration. In either case the lesion must be a destructive one and the degeneration a descending one, since the pyramidal fasciculi are incapable of an ascending degeneration, just as columns of Goll or Burdach are incapable of a descending degeneration.

It is scarcely necessary to call to mind the fact that degenerations, either ascending or descending, do not exist unless the destructive lesion attacks the white fasciculi. In order to account for a variety of clinical phenomena in connection with the four pyramidal fasciculi, it is well to bear in mind the observation of Flechsig and Pierret, and these are regarding the semidecussation designated generally as decussation of the pyramids (each pyramid giving origin to two spinal fasciculi, the one crossed, the other direct), but that this intercrossing is subject to variations is not so well known. Thus Flechsig gives three groups, in types. The first is the most common and consists in a symmetrical semidecussation, each pyramid furnishing a crossed and a direct fasciculus. Seventy-five per cent are of this type, the crossed being of most importance and ordinarily represented by 91 per cent of fibers of pyramid. Pierret has made observations reversing this proportion and making a variety of same type. In this the direct fasciculus is represented by 90 per cent, the crossed by 10 per cent of all fibers. The intercrossed are then hardly worth taking into account. A cerebral lesion, then, would give paralysis on same side of body as lesion, contrary to rule. The second type has been observed in 11 per cent (11 in 100 cases). It is the total decussation; the direct fasciculi fail completely. The third or asymmetric type has been observed in the proportion of 40 per cent. In this case there exist only three fasciculi, one pyramid dividing into two, a direct and a crossed, the second pyramid being intercrossed in toto. The termination of these pyramidal fasciculi also interests us. The pyramidal fasciculus grows smaller gradually as it descends toward the filum terminale. This fact proves that its fibers gradually disappear in the descending course of the fasciculus through the different spinal regions. Flechsig and Charcot both assert that the termination of the nervous fibers, which appear to be a direct emanation from the constituent fibers of pyramidal fasciculi, is not in the anterior roots, because, while the anterior cells and anterior roots are already greatly advanced in development, the pyramidal fasciculi are barely traced.[1] There can therefore be no continuity. But the opinion of the majority of writers is that a connection does exist between the terminal extremities of pyramidal fibers and the multipolar motor cells. It is also possible that some of the fibers are prolonged into the commissure and thus reach the opposite side of the cord.

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[1] Annal of Universal Medical Sciences, 1893, B 16.

[2] Charcot, Pathological Anatomy of Nervous System, page 3.

The causes of amyotrophic lateral sclerosis are somewhat obscure. That it may be caused by injuries we see in the present case. It is probable that anything that will cause spastic spinal paralysis, such as traumatic influences, exposure to cold, wet, etc., will also cause this. In the diagnosis much may be gained by observing that which does not exist as well as that which does, if duly impressed with the negative symptoms, viz, the absence of sensory impairment, of bladder troubles, and bed sores. The positive symptoms are at first confined to upper extremities. The rigidity of limbs, increase of all muscular reflexes, with a true motor paresis, is more characteristic of the disease first described by Seguin in 1873 and later by Erb as "a peculiar paraplegiform affection"—lateral sclerosis. In fact, the amyotrophic form is only a variety or type of the same disease, the motor cells having the destructive effects of lesion transmitted to them at different points, as do the anterior cornu, the latter causing atrophy. Spitzka accounts for this atrophy by the disappearance of many of the fibers which run into the gray substance from the reticular process. He states that the cells in the anterior horns are not involved, as he has observed, although in its gross dimensions the anterior horns seem to be as a whole atrophied. I have been much interested in a recent paper[2] by Dr. Hammond. But that amyotrophic lateral sclerosis and progressive muscular atrophy are the same clinically and pathologically I can not agree. That spasticity often precedes the atrophy and paralysis, or rather paresis, is true, but that the spastic symptoms or the excitable tendon reflexes disappear when atrophy and paresis begin is not true, as evidenced by case now under observation. Furthermore, in progressive muscular atrophy we have no contractures, nor do we have periods of rest or apparent improvement, as in amyotrophic sclerosis, but a progression. Again, as pointed out, neither ascending nor descending degenerations are possible when lesion is limited to gray substance. Profound alterations of cord, when limited to gray substance, either acute, as infantile paralysis, or chronic, in protopathic spinal amyotrophy, are never followed by descending degenerations, unless it be by accidental propagation to the white fasciculi.

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[1] The Anatomy of the cord in newborn.

[2] G. M. Hammond, New York Medical Journal January 6, 1894: Progressive Muscular Atrophy.

Again, according to the Wallerian law of secondary degenerations of nerves, it is always in a direction from the trophic centers. The pyramidal fasciculi can only degenerate downward. The only fasciculi in lateral column that will submit to an ascending degeneration are the direct cerebellar fasciculi, and so far as known no symptomatology has been affixed to their lesions. Laying aside the theories of muscular origin and of peripheral nerve origin of progressive muscular atrophy, the disease has been thoroughly studied and ably discussed in the past twenty-five years by Eisenmann, Roberts, L. Clark, Erb, Friedreichs, Charcot, Wood and Dercum, Osler, etc. A majority of these and other observers show that a decided majority of cases involve the anterior cornua alone, or these in connection with the antero-lateral columns. The number of cases observed in which antero-lateral columns alone or posterior columns and posterior nerve roots are involved are very limited, and more accurate investigation increases the number of instances in which lesions of anterior cornua are found. And as the fibers of anterior roots arise from the cells of anterior cornua, disease of latter must affect unfavorably the nutrition of the former, hence their atrophy. This disease, then, would be regarded as a chronic anterior poliomyelitis, and the apparent extension to other parts of cord, if at all, is merely a coincidence, or on the ground of continuity of these parts. The pathological lesions are in no way the same, nor are the clinical phenomena in any way allied in progressive muscular atrophy and amyotrophic lateral sclerosis, although progressive muscular atrophy may at times affect nearly all the columns of the cord. Anæsthetic leprosy, labioglosso-pharyngeal paralysis, disseminated sclerosis, etc., are not difficult of differentiation if origin, course, and negative symptoms be considered.

Treatment.—The treatment of amyotrophic lateral sclerosis and its allied affection, bulbar paralysis, like that of progressive muscular atrophy, can be but palliative and symptomatic. Hence the lesion is progressive in spite of drugs. Care of patient, with attention to diet, exercise, climate, baths, etc., all should be directed. Most important of all is rest, as it seems to retard the progress of disease. Strong tonic treatment is indicated. Strychnine, if used at all, should be carefully watched and stopped when reflex excitability becomes marked. In the case which I have now under observation I am under impression that extract of Indian hemp has done most good. He has used remedy for about one year now. It acts probably by contracting blood vessels as well as quieting nervous irritability. Were it possible to absorb any of new-formed tissue, the combination of iodide of potassium and ammonium chloride should do some good. Know nothing of barium chloride. Electricity to exercise the paretic muscles is palliative only. The cells controlling muscles are degenerating, and a progressive atrophy will not be prevented.

CHRONIC PULMONARY PHTHISIS WITHOUT TUBERCLE.

By A. C. Smith, Passed Assistant Surgeon, Marine-Hospital Service.

It happened that the patient whose case is here described came under my treatment on two occasions, at different hospitals, and my observation of him, therefore, extended over a considerable period of time. The case proved a very interesting one and very unusual in character; for, while the physical signs and other symptoms resembled closely those of pulmonary tuberculosis, I succeeded in demonstrating, to my own satisfaction at least, that the disease was not due to tubercle and that the tubercle bacilli were not present in the lungs.

Nils Johnsen, a native of Norway, aged 46 years, was admitted to hospital as a patient of the Marine-Hospital Service at Galveston, Tex., January 2, 1892, and was discharged March 8, 1892. He was admitted to the United States Marine Hospital at Memphis, Tenn., October 13, 1893, and was discharged January 22, 1894.

Family history.—His father was drowned at the age of 57 years. His mother died at the same age of an affection of the lungs, from which she had suffered for some eighteen years. She had had occasional spitting of blood, and her disease must have been similar to that from which the son is now suffering, or the counterpart of it. One brother died at the age of 53 of pneumonia. Another brother and a sister died in youth, not of any lung disease. He is unmarried and has no children.

Personal history.—The patient dates the beginning of his disease of the lungs about the year 1882, when he began to have a cough and became considerably debilitated. Two years previous to that he had a venereal ulcer, and received constitutional treatment for a short time. I questioned him carefully, but could not make certain of a history of syphilis. He gave no clear and positive account of secondary symptoms. He does not give a history of any other important sickness. The cough became chronic, and he sought hospital relief at intervals on account of it, meanwhile following his vocation of seaman. The cough and debility, with sometimes night sweats and sometimes slightly bloody expectoration, are the symptoms he told of. He is recorded in the hospital register at Galveston, Tex., as having been treated there for tubercle of lung October 26 to November 7, 1888, February 11 to 26, 1889, and July 6 to August 28, 1889. He said that he was treated in the United States Marine Hospital at Chicago, Ill., in the year 1890, for the same disease. He has followed the life of a sailor from boyhood, sometimes at sea, but a greater length of time on the Great Lakes of America.

Physical signs.—A man of thin physique, above the medium height, of fair complexion and reddish-yellow hair and beard. Upon the first examination of the patient I formed the opinion that the disease was not due to tubercle, although much resembling pulmonary tuberculosis. Besides the excessively long duration of the disease and some peculiarities in the condition of the lungs, particularly the contrast between the two, it was a conspicuous fact that the distinctive cachexia of tubercle was absent. The color and expression of the countenance were good, and the distressful, drawn look was not present. Neither did the patient suffer with that endless variety of pains and discomforts which make tuberculosis so distressing to the physician as well as to the victim.

January 3, 1892, the following observations were made from physical examination: General nourishment fair. Fingers extremely clubbed. The upper part of the left side of the chest is much retracted and does not expand at all in respiration. The lower part of this side is also somewhat retracted, the whole effect being to make him appear bent slightly to the left. The right side of the chest is a little retracted at the apex of the lung, and, although expanding in all parts, does not expand well in respiration. The percussion note over the left side of the chest is dull, with the exception of an area to the outer side of the nipple, where it is resonant, but a little high pitched. A little of the cracked-pot resonance can be detected at the apex of the left lung. The percussion note over the entire right side of the chest is resonant and somewhat tympanitic, as in emphysema. Auscultation shows the respiratory sounds in the left lung much diminished. The apex gives no sound except with forced respiration. There is a distinct click heard with inspiration on this side. In the right lung the respiratory sounds are rough, with squeaking rales and prolonged expiratory sounds. Thus the percussion note and respiratory sounds of the right lung indicate an emphysematous condition throughout. If tubercle is present, it is strange that one lung should be in this condition while the other is almost totally involved in the disease. The voice is not transmitted in any part of the chest, as I would expect to find it. There is no distinct bronchophony, and whispered words are not transmitted. There is a harsh murmur to be heard over the apex of the heart with the systole. This is apparently due to friction in the pleural cavity where it overlaps the heart.

A specimen of the patient's sputum was given January 4 to Prof. Allen J. Smith, of the University of Texas medical department, for examination. He reported failure to find the tubercle bacillus. January 12 I examined a second specimen carefully without success in finding bacilli.

During his period of treatment at Galveston little change took place in his condition more than the improvement resulting from rest and comfortable living. For the first month expectoration was abundant, and at the last of that period profuse and tinged with blood at times. After that there was evidence that a cavity had been emptied in the upper lobe of the left lung. The cough and expectoration diminished, and the patient said he felt better. During the first week in the hospital he had slight variations of temperature, but he did not have hectic fever at any time. Diarrhœa was present as an annoying symptom, but yielded to treatment. Proceeding on the theory that the disease was syphilis of the lungs, I gave antisyphilitic medicines for a length of time, varying between the mixed treatment and the iodides of sodium and potassium. I never perceived any effect from them. Cod-liver oil and malt extract were also given.

When he applied to me for relief at Memphis he seemed as if I had seen him only the day before, his look of comfortable invalidism unchanged by the interval of nearly two years. I had no record of his weight, but judged it had not varied much. He said he had spent the greater part of the time upon and about the lakes. He had been better and worse at times, and he gave a history of a considerable hemorrhage from the lungs in the spring of 1893. He complained of shortness of breath and seemed less capable of exertion than when last seen in Galveston. I examined his chest with a great deal of interest, with the following findings:

The left side of the patient's chest is much shrunken and is almost completely motionless in respiration, while the right side expands quite freely. The left lung is solidified and is in a condition which might be described as withered. The percussion note on this side is perfectly flat and there is no vesicular murmur to be heard. Tubular breathing and click-clack rales are heard. If there is a cavity in the upper lobe of the lung, it is difficult to distinguish it from an expanded bronchus The percussion note on the right side is a little flat at the apex, but elsewhere rather tympanitic. The respiratory sounds in this lung seem exaggerated except in a small area at the apex, where is tubular breathing, and the lung is evidently trying to do the work of both. Bronchophony may be heard throughout the left lung and at the apex of the right lung. The heart beat is visible to an unusual extent on the left side of the chest on account of the depression of the chest wall. It is regular and strong. There is a loud friction murmur with the systole, heard where the beat is visible.

Thus the change which had taken place in the interval above referred to consisted in hardening and contraction of the left lung, completing its destruction, and some invasion or extension of the disease in the apex of the right lung. The peculiar cachexia of tuberculosis was as notably absent as ever. In a later examination his respiratory capacity was tested and found to be 80 cubic inches, about one-third of what it should be.

The patient was exhibited at a meeting of the Memphis Medical Society and also at a meeting of the Tri-State Medical Society, and was the subject of much discussion and of opposed opinions among physicians present. Several examinations of his sputum were made at different times by Dr. E. C. Ellett and by Dr. Henry Posert, of Memphis, and all reports showed the presence of shreds of disintegrated lung tissue, but no tubercle bacilli. Dr. Posert reported finding shreds of elastic tissue.

From the result of the repeated examinations of the sputum and from the peculiar characteristics of the disease I am convinced that there is here a distinct case of chronic wasting of the lung not caused by the tubercle bacillus. Opposed to the theory that the case is one of past or cured tuberculosis is the fact that the disease is making progress and disintegration of the lung is taking place at the present time, as shown by blood and shreds of tissue in the sputum.

There was no special change in his condition during his stay in the hospital at Memphis. At times night sweats evidenced his debility. His sputum was sometimes streaked with blood. He was troubled with moderate diarrhœa, and he had some slight malarial attacks, which were stopped with quinine.

Johnsen is a frequenter of marine hospitals, his movements being affected by the roving disposition of the sailor, and is likely to end his days in one. A thorough examination of the pathology of his lungs would be interesting and valuable.

APPENDICITIS—OPERATION—RECOVERY.

By E. R. HOUGHTON, Passed Assistant Surgeon, Marine-Hospital Service.

W. J. B.; aged 22 years; nativity, Pennsylvania; admitted to the United States Marine Hospital, Vineyard Haven, Mass., April 29; discharged June 23, 1894, recovered.

History.—Patient was in excellent health until during the night of April 27, when he was awakened from sleep by what he supposed was a blow on the abdomen from one of his shipmates. He felt considerable pain, and thought it must be due to cramp colic. On admission, April 29, he was suffering from severe pain in the abdomen, which was greatly distended, and from retention of urine. He had been troubled with constipation for some time previously. Examination revealed tense and painful abdomen, hard lump in right iliac fossa, heart and lungs, etc., normal. Temperature and pulse normal. Everything seemed to point to a fecal impaction, and patient was treated accordingly with enemata, castor oil, and hot bath; later hot applications to abdomen. Retention of urine was relieved promptly by the bath.

The next day the patient had a number of large movements of the bowels which were yellow in color. The pain and tension of abdomen were greatly relieved and patient felt able to get up.

May 1.—Chill and profuse sweat during night; temperature, 38.4° C. Bowels moving freely.

May 2.—Slight sweat; all pain limited to lump in the right iliac fossa; pus suspected.

May 3.—No sweat; temperature normal; pain much less and intermittent; the lump painful only to touch. Bowels still moving several times daily.

May 5.—Temperature, 38.2° C. at night, 37.3° C. this morning. Bowels still moving several times daily; fluctuation fell in inguinal lumbar region Patient refused to be operated on until arrival of his father, who had been telegraphed for.

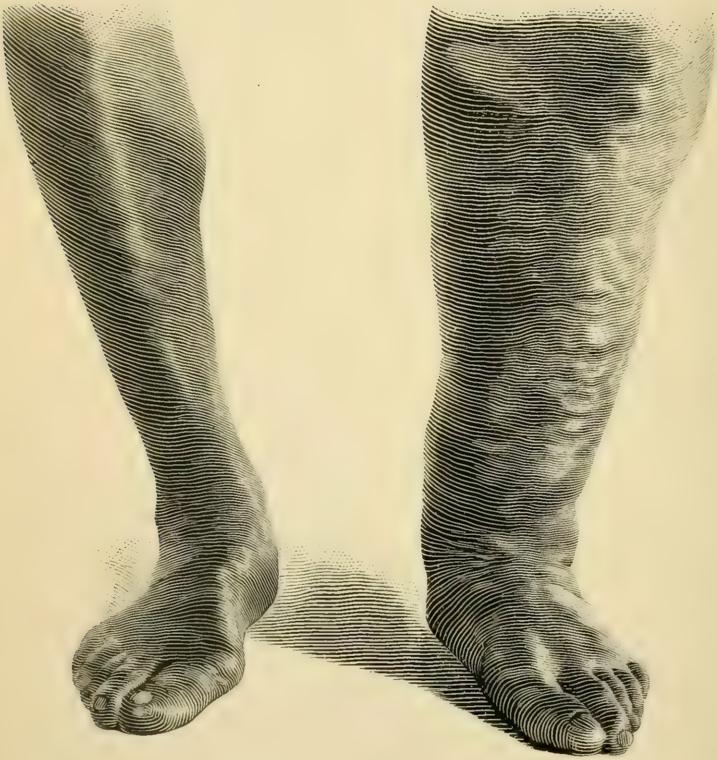
May 6.—A large fluctuating tumor suddenly showed itself to-night, and an operation was decided upon, after consulting with Dr. Winthrop Butler, who assisted. The patient still refused an operation unless we could prove pus to be present. This was done with an aspirator, about half a gill of foul-smelling pus being withdrawn. Chloroform was used. An incision 4 inches long was made at outer border of and parallel with rectus muscle, and the sac brought into view. As much pus as possible was aspirated before opening sac. The appendix was at once seen, lying at bottom of cavity, but on seizing it with forceps it was found to be detached. The closed extremity was apparently normal, but the attached end was black and gangrenous; it had evidently sloughed off. The sac was cleansed and filled with plain gauze and wound dusted with iodoform. Temperature, 35.8° C. before operation, 37.4° C. after. For the first four days there was considerable discharge of foul pus and sloughs, but on the 16th, ten days after the operation, wound was nearly filled up; there was no discharge, and patient was sitting up in bed. By June 1 the wound was filled up, but the skin refused to cover the granulations; so on June

10 five skin grafts were applied, of which three were successful, and on the 23d of June patient was discharged entirely healed, except small point in center of wound, which healed in less than a week after his departure.

In October patient called to show his wound, which was perfectly healed. He had that day helped pull in a large hawser requiring the united strength of five men and taking thirty minutes to accomplish. This is considered one of the hardest bits of work aboard a tug, and yet our patient did his share without the slightest inconvenience.

Remarks.—The cause in this case would seem to be fecal impaction, which patient undoubtedly had in a mild form.

The temperature after the operation never once rose to 38° C., the highest being 37.8° C. at 5 p. m. the next day.



AN UNUSUAL CASE OF ELEPHANTIASIS ARABUM.

AN UNUSUAL CASE OF ELEPHANTIASIS ARABUM

By L. E. COFER, Assistant Surgeon, Marine-Hospital Service.

The original of this photograph has received treatment in the Marine Hospital, port of Savannah, Ga., in the last few months, for several diseases; and the fact that he has never complained of inconvenience from elephantiasis, of which disease he is plainly a victim, made his case, to my mind, worthy of mention.

H. I.; aged 40 years; nativity, Georgia; color, black. At age of 19 had an attack of malarial fever and catarrhal jaundice, and a few days after a supposed recovery from this trouble had a return of the fever. This ceased abruptly, and an erythematous redness and swelling of the thigh, knee, and leg of the left side was noticed. These symptoms lasted five days, during which time he noticed "that his leg was growing larger." From that time to the date of this writing he claims that his leg has been slowly getting larger. An examination shows that the integument and the subcutaneous tissue are greatly thickened. There is some swelling of the lymphatic glands. The following are the peculiar points connected with his case:

(1) No other case can be found on the Georgia seaboard, and it is highly probable that this is the only case in the State.

(2) He has had the disease for twenty-two years and there has been no perceptible change in his condition.

(3) He suffers no inconvenience and his physical condition is good.

(4) His father and mother were free from this disease and his children are perfectly sound.

(5) There has never been a tendency to cracking and sloughing of the diseased tissues.

CHOLECYSTOTOMY.

By J. B. EAGLESON, Acting Assistant Surgeon, Marine-Hospital Service.

C. F.; aged 59 years; an American; was admitted to the marine ward at Providence Hospital, Seattle, Wash., August 5, 1893, with well-marked jaundice of two weeks' duration.

For a few years past he had not enjoyed his usual vigor, but had suffered from no special disease. He gave no history of any severe colics and no jaundice until the present illness. A few days before the jaundice appeared he felt a sense of soreness in the region of the liver, accompanied by loss of appetite and occasional vomiting. On admission to the hospital there was slight tenderness on percussion over liver, but no tumor or enlargement could be found. The tongue presented a dark-brown coating; he had no appetite, and the stools were putty colored. His urine contained a large amount of bile pigment. His temperature ranged from normal to 99.5° F. At this time it was thought that the jaundice was caused by a catarrhal inflammation of the common duct. There was no change in the symptoms until August 9, when he had a slight chill, followed by a sudden rise of temperature to 103° F. He was put on occasional large doses of calomel and small doses of quinine at frequent intervals. The temperature gradually subsided, his appetite improved, the stools became darker, and the jaundice faded somewhat.

On August 2 he had another slight chill, and the temperature again went up to 102.5° F. The vomiting returned, the stools became light colored again, and the jaundice increased. At this time there was a marked tenderness over the region of the gall bladder, but no sharp pains. Hot turpentine stupes were applied over the abdomen and the calomel-quinine treatment was repeated. The fever, vomiting, and tenderness again subsided; but the jaundice persisted, and he grew weaker and lost flesh. After a few days the evening temperature was frequently below 98° F. During the following three weeks the case was carefully watched, and it soon became evident that the cause of obstruction in the duct was of a more permanent character than catarrhal inflammation, unless occlusion of the duct had resulted from inflammatory adhesions.

The diagnosis appeared to rest between impaction of a gallstone in the common duct and an obstruction from pressure upon the duct by a malignant growth encroaching from some of the neighboring organs. The absence of attacks of hepatic colic at any time during the history of the case, and especially at the commencement of the present illness, before the appearance of the jaundice, seemed to exclude the descent of a gallstone into the duct. On the other hand, the absence of any tumor or distention of the cyst, such as would be likely to occur from pressure on the common duct, together with the high temperature during the first few weeks of the attack, seemed to quite effectually exclude a malignant growth. As the patient's condition did not improve, an exploratory incision was considered justifiable, at least to obtain a proper diagnosis, and with a possible chance of being able to relieve the obstruction.

Beginning at the inner end of the tenth rib, an incision was carried downward 4 inches, and later 2 inches to the right, across the lower border of the liver, making a V-shaped cut through the abdominal wall. As the result of the extensive inflammation, the under surface of the liver was found to be firmly adherent to the omentum, stomach, and intestine, so that the gall bladder could not be reached from any direction. On palpation a hard, nodular tumor could be felt deeply between the under surface of the liver and the stomach, in the location of the pylorus and ducts. It felt very much like a cancerous growth in the pylorus or head of the pancreas. On separating the adhesions between the stomach and the liver the inner side of the gall bladder was torn open, revealing its cavity packed with calculi, but containing no bile. It was this mass of stones in the contracted cyst, embedded among the adhesions between the organs, that gave the feeling of a nodular tumor. The walls of the bladder were so friable and adherent to the stomach and liver on either side that the tear extended through its whole length. When the stones contained in the bladder were scooped out the cystic duct was also found to be packed full of small ones. These were removed, and a single one, larger than any of the others, measuring seven-eighths of an inch in the long and five-eighths of an inch in the short diameter, was found firmly lodged in the common duct, just below the union of the cystic and the hepatic ducts. This was removed with some difficulty by passing a small scoop, bent at a right angle, beneath it and lifting it out. When this was out of the way a large probe could be readily passed down through the duct into the duodenum.

The question now arose as to the best method of dealing with what remained of the sac in its contracted and friable condition. Its edges could not be brought out and stitched to the skin, or even to the aponeurotic layer of the abdominal wall or parietal peritoneum, as suggested by Mr. Mayo Robson in a recent paper in the British Medical Journal. Its torn and ragged edges could not be closed by sutures with any hope of success. Owing to the firm adhesions to the stomach, intestines, and liver, and its softened condition, the entire removal of the bladder would have been a very tedious and difficult task. In fact, it was practically obliterated already by the results of the inflammation, so we considered that the best thing to do was to pack the cavity with iodoform gauze down to the junction of the cystic with the common duct, hoping to get complete obliteration from the resulting granulations. The ends of the strips of gauze were carried out through the abdominal wound, which was closed with silkworm gut sutures.

The wound healed by first contact throughout, except the opening left for the gauze and a small mural abscess which afterwards formed at the angle of the incision from strangulation of the small point by the deep sutures. The gauze was removed on the fourth day, and the cavity, after being thoroughly irrigated with a 1 to 2,000 bichloride solution, was repacked. This was repeated every second day until the opening closed by granulation, in three weeks. But little bile, and occasionally a small quantity of clear, thick mucus, discharged from the wound during the process of healing. The stools gradually resumed a normal color, the appetite returned, and he gained flesh rapidly.

On the eighth day after the operation five stones were washed out by the irrigation, and four more were removed on the tenth day. They had evidently been lodged in the hepatic duct or some of its branches.

This made a total of eighty-seven stones removed altogether. Their total weight after being dried was 16.7 grams. A few days since the patient reported himself as "feeling better than he had for several years," and he has gained 50 pounds since the operation.

STATISTICS

UNITED STATES MARINE-HOSPITAL SERVICE.

STATISTICS OF THE UNITED STATES MARINE-HOSPITAL SERVICE.

The following statistical tables are self-explanatory:

TABLE I.—COMPARATIVE TABLE OF NUMBER TREATED—1868 TO 1894.

Fiscal years.	Number of places at which relief was furnished.	Number of sick and disabled seamen furnished relief.
Prior to reorganization:		
1868	64	11,535
1869	64	11,356
1870	74	10,560
After reorganization:		
1871	72	14,256
1872	81	13,156
1873	91	13,529
1874	91	14,356
1875	94	15,009
1876	94	16,808
1877	100	15,175
1878	210	18,223
1879	210	20,922
1880	210	24,860
1881	....	32,613
1882	....	36,184
1883	....	40,195
1884	....	44,761
1885	....	41,714
1886	....	43,822
1887	....	45,314
1888	....	48,203
1889	....	49,518
1890	....	50,671
1891	....	52,992
1892	....	53,610
1893	....	53,317
1894	....	52,803

TABLE II.—EXHIBIT OF OPERATIONS OF THE SERVICE DURING THE YEAR ENDED JUNE 30, 1894.

Ports.	Total number of seamen treated.	Patients in hospital July 1, 1893.	Admitted during the year.	Total treated in hospital.	Discharged.	Died.	Remaining in hospital June 30, 1894.	Number of days' relief in hospital.	Number of seamen furnished office relief.	Number of times relief was furnished.	Number of persons examined physically, including pilots.	Amount expended.	Tonnage tax collected.
Total	**52,803**	**865**	**12,860**	**13,725**	**12,407**	**448**	**870**	**389,136**	**39,078**	**61,195**	**2,018**	**$586,741.75**	**$539,028.47**
Albany, N. Y	4		4	4	3		1	269			17	372.00	
Alexandria, Va	41	1	4	5	4	1			36	100			138.00
Apalachicola, Fla	53		18	18	17		1	358	35	61		718.00	1,725.30
Ashland, Wis	78	1	27	28	24		4	631	50	50		686.35	
Ashtabula, Ohio	206	3	39	42	36	1	5	882	164	362		1,145.63	
Astoria, Oreg	31		22	22	18		4	499	9	13		617.20	3,419.08
Baltimore, Md	2,072	41	506	547	488	20	39	19,001	1,525	2,063	63	17,245.22	26,559.39
Bangor, Me	130	4	50	54	49	2	3	1,247	76	104	2	1,875.94	84.54
Barnstable, Mass., and subports	111								111	323		432.53	47.34
Bath, Me	78	4	38	42	42			778	36	84		1,100.50	23.13
Beaufort, N. C	54		6	6	5	1		105	48	102		400.65	3.12
Beaufort, S. C	40		4	4	2	2		14	36	42		123.85	2,373.61
Belfast, Me	15								15	63		188.00	125.76
Bismarck, N. Dak	28	1	4	5	5			254	23	59		436.30	
Boston, Mass	3,412	51	1,019	1,070	965	27	78	31,357	2,342	3,071	197	26,101.00	47,838.12
Bridgeport, Conn	18		15	15	12		3	503	3	6		510.20	51.93
Brownsville, Tex											6	100.00	
Brunswick, Ga	103	6	34	40	36	4		1,606	63	105		1,999.77	6,600.78
Buffalo, N. Y	2,135	13	319	332	294	14	24	7,626	1,803	2,503	72	10,087.69	
Burlington, Iowa	5	1	4	5	5			119				75.60	385.35
Cairo, Ill	839	7	344	351	326	13	12	5,499	488	670	2	8,283.22	
Cambridge, Md	161		7	7	7			112	154	463		260.62	
Castine, Me	4		1	1	1			14	3	6		11.00	54.93
Cedar Keys, Fla	129								129	154		159.00	
Charleston, S. C	960	10	135	145	128	6	11	3,557	815	1,133	34	5,656.15	4,098.90
Chattanooga, Tenn	21		2	2	2			89	19	55		360.31	
Chicago, Ill	2,963	49	434	483	428	16	39	17,939	2,480	3,031	39	24,884.68	9.48
Cincinnati, Ohio	1,117	32	278	310	280	10	20	9,781	807	1,067	13	12,558.55	
Cleveland, Ohio	1,446	23	253	276	254	7	15	9,672	1,170	1,867	12	9,149.66	158.55
Corpus Christi, Tex	14	1	8	9	6	1	2	203	5	7	9	570.14	
Darien, Ga	26								26	39		231.15	
Detroit, Mich	1,748	17	336	353	315	9	29	12,329	1,395	2,114	65	13,248.60	112.62
Dubuque, Iowa	67	3	40	43	39		4	801	24	37	10	1,380.16	
Duluth, Minn	255	2	32	34	32	1	1	768	221	281	16	1,075.44	138.45
Eastport, Me	23								23	53		56.00	994.86
East Saginaw, Mich												3.25	
Edenton, N. C	132		4	4	4			34	128	244		370.50	
Edgartown, Mass												54.50	145.29
Ellsworth, Me	44		2	2	2			59	42	181	2	344.50	166.11

Elizabeth City, N. C	61		1	1	1			4	60	86	116	253.00	
Erie, Pa	71	2	35	37	31	1	5	543	34	37		668.14	
Escanaba, Mich	101	4	28	32	30	1	1	887	69	82		1,319.15	
Eureka, Cal	38	1	17	18	17	1		384	20	28	2	735.55	53.22
Evansville, Ind	996	11	242	253	237	6	10	4,491	743	1,059	3	7,872.35	
Fernandina, Fla	41	2	10	12	12			388	29	55		748.00	2,658.63
Fredericksburg, Va	221	1	14	15	14		1	339	206	441		792.52	
Gallipolis, Ohio	337	5	165	170	160	2	8	3,736	167	362		4,058.99	
Galveston, Tex	608	8	181	189	180	3	6	3,724	419	535	66	6,386.94	11,332.29
Georgetown, D. C	152	2	41	43	37	2	4	1,123	109	138	3	675.00	26.16
Georgetown, S. C	141	1	22	23	22		1	343	118	304		755.21	40.56
Gloucester, Mass	352								352	430		673.67	1,163.56
Government Hospital for the Insane, Washington, D. C	26	25	1	26	3	2	21	8,704				5,615.43	
Grand Haven, Mich	65	1	12	13	13			321	52	139	22	742.00	
Green Bay, Wis	53		19	19	19			577	34	54		912.89	
Hartford, Conn	3		3	3	3			97				97.00	4.35
Jacksonville, Fla	114	2	70	72	69	3		2,171	42	52	20	2,630.86	198.33
Keokuk, Iowa	8		8	8	8			81				34.83	
Key West, Fla	976	11	87	98	84	3	11	4,479	878	1,384	10	6,024.12	2,555.66
La Crosse, Wis	106	2	64	66	63		3	1,133	40	172	1	1,658.97	
Lewes, Del	46		33	33	30	3		532	13	21		756.03	
Little Rock, Ark	38		1	1	1			60	37	67		308.10	
Louisville, Ky	743	20	238	258	240	9	9	5,178	485	737	26	8,581.61	
Ludington, Mich	129		7	7	7			109	122	165		348.50	
Machias, Me	80		28	28	27		1	691	52	38		919.54	130.50
Manistee, Mich	64	2	22	24	22	1	1	524	40	84	1	717.14	
Marquette, Mich	35	3	8	11	10		1	177	24	24		537.00	
Marshfield, Oreg	176	2	16	18	18			419	158	316		1,180.79	
Memphis, Tenn	1,261	9	222	231	207	13	11	4,798	1,030	1,428	19	9,337.32	
Michigan City, Ind	21								21	52		154.25	
Milwaukee, Wis	822	19	324	343	318	5	20	8,066	479	783	39	7,895.07	
Mobile, Ala	840	13	324	337	305	8	24	7,940	503	597	30	11,808.30	6,981.57
Miscellaneous and traveling expenditures												9,522.02	
Nashville, Tenn	158		16	16	16			188	142	464		690.85	
New Bedford, Mass	57								57	85		402.10	196.29
Newbern, N. C	208	4	60	64	60	1	3	900	144	297		1,208.74	15.87
New Haven, Conn	73	2	51	53	50	1	2	1,141	20	23	16	1,577.00	344.31
New London, Conn	221	12	148	160	152	2	6	4,132	61	71		3,634.79	65.88
New Orleans, La	2,296	26	525	551	511	15	25	10,168	1,745	2,263	29	18,303.43	41,272.41
Newport, Ark	37		18	18	18			363	19	23		593.29	
Newport, R. I	74		24	24	21	2	1	365	50	69	74	854.30	34.14
Newport News, Va	50								50	59		228.40	11,220.15
New York, N. Y	4,465	89	974	1,063	902	60	101	37,850	3,402	5,950	179	58,307.07	199,471.48
Norfolk, Va	1,665	24	399	423	378	22	23	10,079	1,242	1,499	130	13,753.80	3,224.40
Ogdensburg, N. Y	80		3	3	3			42	77	111		399.35	377.49
Oswego, N. Y	130	1	18	19	17	2		789	111	223		1,502.61	1,685.10
Pensacola, Fla	193	8	150	158	154	2	2	3,299	35	72	26	4,037.75	17,547.00
Philadelphia, Pa	1,947	35	622	657	607	17	33	14,388	1,290	1,944	160	22,575.17	51,700.41
Pittsburg, Pa	1,133	10	104	114	109	2	3	2,113	1,019	1,567	23	4,712.70	
Port Huron, Mich	173	1	17	18	17	1		321	155	462		544.33	
Portland, Me	1,104	13	210	223	204	5	14	6,362	881	973	54	9,591.88	8,090.37

TABLE II.—EXHIBIT OF OPERATIONS OF THE SERVICE DURING THE YEAR ENDED JUNE 30, 1894—Continued.

Ports.	Total number of seamen treated.	Patients in hospital July 1, 1893.	Admitted during the year.	Total treated in hospital.	Discharged.	Died.	Remaining in hospital June 30, 1894.	Number of days' relief in hospital.	Number of seamen furnished office relief.	Number of times relief was furnished.	Number of persons examined physically, including pilots.	Amount expended.	Tonage tax collected.
Portland, Oreg	386	4	96	100	93	1	6	2,194	286	394	20	4,138.48	$16.83
Portsmouth, N. H	27	1	15	16	16			333	11	11		633.00	77.55
Port Townsend, Wash	336	18	139	157	136	7	14	7,158	179	246	29	11,877.56	8,566.77
Providence, R. I	247	5	106	111	106	1	4	2,020	126	198		2,473.60	405.78
Purveying division												41,464.48	
Richmond, Va	57	2	14	16	14		2	291	41	43	17	841.00	370.56
Rockland, Me	236	1	205	206	199	3	4	3,563	30	30		4,102.61	
Rome, Ga	31		3	3	2		1	13	28	73		195.40	
Sag Harbor, N. Y	29								29	225		216.00	
Saginaw, Mich	81		42	42	37		5	1,468	39	55		1,248.55	
St. Louis, Mo	1,846	31	507	538	475	25	38	14,384	1,308	1,735	19	13,923.48	
St. Paul, Minn	13	1	5	6	5		1	69	7	16		375.00	81.09
Salaries, Supervising Surgeon-General's Office												24,720.00	
Salem, Mass	21								21	21		92.40	263.28
San Diego, Cal	256	5	143	148	147	1		4,929	108	704	13	6,705.34	2,817.51
Sandusky, Ohio	201	1	141	142	132	2	8	2,685	59	94		3,086.06	
San Francisco, Cal	3,330	97	710	807	683	39	85	43,232	2,523	5,697	143	32,342.64	37,317.36
San Pedro, Cal	138	7	78	85	77	1	7	3,338	53	136		3,129.45	
Sault Ste. Marie, Mich	395	10	90	100	86	2	12	1,750	295	288		2,158.19	
Savannah, Ga	934	8	253	261	245	7	9	4,295	673	822	19	7,516.02	11.834.10
Seattle, Wash	671	10	117	127	116	4	7	4,076	544	1.107	26	4,019.37	
Shreveport, La	124		16	16	15	1		311	108	880		1,170.65	
Sitka, Alaska	21	1	4	5	5			125	16	30		730.69	663.08
Solomons, Md	382		22	22	22			226	360	438		647.95	
Superior, Wis	40		11	11	11			349	29	36		606.00	
Tacoma, Wash	29		26	26	23	2	1	581	3	5	5	636.24	
Tampa, Fla	19		2	2	2			67	17	28		97.45	2,327.39
Tappahannock, Va	227	1	107	108	106		2	904	119	209		1,689.35	
Toledo, Ohio	259	4	109	113	104	4	5	1,846	146	212		1,836.80	
Tuckerton, N. J	6								6	23	90	500.00	
Vicksburg, Miss	62	1	55	56	52	2	2	1,013	6	12		1,563.50	
Vineyard Haven, Mass	303	6	118	124	119	3	2	2,909	179	187	1	5,970.08	
Washington, D. C												15,573.40	
Wheeling, W. Va	71	2	30	32	32			852	39	73		1,016.30	
Wilmington, Del	1								1	1		1.00	4,504.08
Wilmington, N. C	558	7	96	103	88	7	8	3,216	455	560	28	8,847.25	2,247.45
Wiscasset, Me	4								4	58		84.75	167.70
Cape Charles Quarantine	5		5	5	4	1		73					
Delaware Breakwater Quarantine	1		1	1	1			18					
Gulf Quarantine	25	1	16	17	15	2		158	8	14			
Key West Quarantine	79		7	7	3	3	1	65	72	166			

Supplemental ports.													
Bridgeton, N. J													152.04
Bristol, R. I													3.72
Fall River, Mass													58.77
Fort Benton, Mont													46.71
Los Angeles, Cal													1,678.62
Marblehead, Mass													31.68
Newark, N. J													356.22
Newburyport, Mass													23.97
Pembina, N. Dak													.56
Perth Amboy, N. J													373.62
Plattsburg, N. Y													2,541.72
Rochester, N. Y													110.07
Shieldsboro, Miss													4,403.43
St. Augustine, Fla													2.43
St. Marys, Ga													70.47
Stonington, Conn													18.48
Waldoboro, Me													805.26

NOTE.—Tonnage collected at stations as reported by Bureau of Navigation.

TABLE III.—SUMMARY OF PHYSICAL EXAMINATIONS OF SEAMEN MADE BY MEDICAL OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE YEAR ENDED JUNE 30, 1894.

Summary of examinations and causes of rejection.	Total.	Pilots.	Revenue marine.	Merchant marine.	Life-Saving Service.
Summary of examinations:					
Total number examined	2, 018	628	220	94	1, 076
Number passed	1, 944	602	199	89	1, 054
Number rejected	74	26	21	5	22
Causes of rejection:					
Rheumatism	....	....	....	1	1
Tubercle of lung	....	....	1	....	2
Phthisis pulmonalis	....	....	....	1	2
Disease of spine	....	....	....	1	1
Myopia	....	3	3	....	....
Color-blindness	....	7	1	2	5
Deafness	....	....	1	....	1
Disease of heart—					
Valvular	....	....	5	....	....
Hypertrophy	....	2	3	....	....
Varicose veins of leg	....	....	....	....	5
Bronchitis, acute	....	1	....	....	....
Hernia—					
Inguinal	....	2	....	....	1
Oblique	....	....	5	....	....
Diarrhœa, chronic	....	1	....	....	....
Fistula in ano	....	....	1	....	....
Varicocele	....	....	1	....	1
Hydrocele of tunica vaginalis	....	....	....	....	2
Amputation	....	....	....	....	1

TABLE IV.—STATEMENTS, BY DISTRICTS, OF THE NUMBER OF PATIENTS TREATED DURING THE YEAR ENDED JUNE 30, 1894.

Districts.	Total.	Patients in hospital July 1, 1893.	Admitted during the year.	Total number treated in hospital.	Discharged.	Died.	Patients in hospital June 30, 1894.	Number of days hospital relief was furnished.	Number of seamen furnished office relief.
Grand total	**52,803**	**865**	**12,860**	**13,725**	**12,407**	**448**	**870**	**389,136**	**39,078**
North Atlantic	6, 322	85	1, 816	1, 901	1, 751	43	107	49, 698	4, 421
Middle Atlantic	6, 813	138	1, 850	1, 988	1, 759	83	146	58, 912	4, 825
South Atlantic	8, 426	137	1, 810	1, 947	1, 745	78	124	57, 412	6, 479
The Gulf	5, 283	67	1, 314	1, 381	1, 276	33	72	30, 562	3, 902
The Ohio	4, 576	80	1, 075	1, 155	1, 076	29	50	26, 428	3, 421
The Mississippi	4, 310	56	1, 272	1, 328	1, 204	53	71	28, 574	2, 982
The Great Lakes	11, 551	156	2, 326	2, 482	2, 240	67	175	70, 301	9, 069
The Pacific	5, 412	145	1, 368	1, 513	1, 333	56	124	66, 935	3, 899
The quarantine stations	110	1	29	30	23	6	1	314	80

TABLE V.—RATIO OF PATIENTS TREATED IN HOSPITALS IN EACH DISTRICT.

Districts.	Per cent of total number of patients.	Districts.	Per cent of total number of patients.
North Atlantic	30. 00	The Mississippi	30. 81
Middle Atlantic	29. 17	The Great Lakes	21. 48
South Atlantic	23. 10	The Pacific	27. 95
The Gulf	26. 14	The quarantine stations	27. 27
The Ohio	23. 05		

TABLE VI.—AVERAGE DURATION OF TREATMENT IN HOSPITAL IN EACH DISTRICT.

Districts.	Average number of days relief furnished to each patient.	Districts.	Average number of days relief furnished to each patient.
North Atlantic	26.14	The Mississippi	21.51
Middle Atlantic	24.60	The Great Lakes	28.32
South Atlantic	29.48	The Pacific	43.57
The Gulf	22.13	The quarantine stations	14.66
The Ohio	22.80		

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Grand total of all cases	**865**	**12,860**	**7,832**	**4,215**	**360**	**448**	**870**	**39,078**	**52,803**
GENERAL DISEASES	365	5,869	3,507	2,032	155	214	326	17,855	24,089
LOCAL DISEASES	363	5,181	2,994	1,737	174	213	426	18,070	23,614
POISONS AND POISONED WOUNDS		12	8	3			1	20	32
INJURIES AND AMPUTATIONS	137	1,798	1,323	443	31	21	117	3,133	5,068

NORTH ATLANTIC.

TOTAL CASES	**85**	**1,816**	**1,015**	**704**	**32**	**43**	**107**	**4,421**	**6,322**
General Diseases	**26**	**733**	**391**	**296**	**13**	**20**	**39**	**1,807**	**2,566**
Cowpox								38	38
Chicken pox								1	1
Measles		6	6					2	8
Scarlet fever		1	1						1
Influenza		77	64	12		1		67	144
Whooping cough								1	1
Mumps		5	4	1				4	9
Simple continued fever		2	2					1	3
Enteric fever	3	32	28			3	4	7	42
Sporadic cholera		1	1						1
Dysentery		11	8	2		1		8	19
Malarial intermittent fever	3	104	95	10			2	128	235
Malarial remittent fever	2	17	18				1	4	23
Malarial cachexia	1	12	6	5		2		14	27
Beri beri		2	1	1				1	3
Erysipelas, simple		3	3					3	6
Pyæmia								1	1
Syphilis:									
Primary		5	2	3				11	16
Secondary	4	76	4	67	3		6	258	338
Gonorrhœa	4	52	26	25	1		4	564	620
Animal parasites		4	2	2				1	5
Vegetable parasites								1	1
Effects of excessive venery								1	1
Scurvy		2		2					2
Alcoholism		14	14					13	27
Delirium tremens		1	1						1
Debility	1	7	4	4				112	120
Rheumatic fever		32	18	10			4	16	48
Rheumatism	5	175	73	99	2		6	455	635
Gout								1	1
Osteo-arthritis		4	1	1			2		4
Cysts		1					1	2	3
Nonmalignant new growth		7	4	1			2	24	31
Malignant new growth		4	1		1	2			4

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

NORTH ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
General Diseases—Continued.									
Tuberele	3	67	2	46	5	11	6	56	126
Scrofula								1	1
Leprosy myxœdema		1			1				1
Purpura								1	1
Anæmia		8	2	5			1	10	18
Local Diseases	**48**	**832**	**448**	**343**	**16**	**22**	**51**	**2,143**	**3,023**
DISEASES OF THE NERVOUS SYSTEM	5	56	22	23	2	3	11	98	159
Congestion, cerebral								2	2
Dropsy of brain		1	1						1
Myelitis	2	2	1	2			1	1	5
Neuritis	1	9	1	5			4	2	12
Abscess of the brain		1				1			1
Spastic spinal paralysis								1	1
Locomotor ataxy		4			1		3	2	6
Paralysis		1				1		2	3
Hemiplegia	1	3		2			2	1	5
Paraplegia		1				1			1
Local paralysis		2	1	1				4	6
Spasm of muscle		1	1						1
Hyperæsthesia		1		1					1
Neuralgia		14	9	4			1	37	51
Facial		2	2					15	17
Sciatica	1	7	4	4				10	18
Vertigo		2		2				3	5
Megrim		2	2					11	13
Epilepsy		2		2				5	7
Hysteria		1			1			2	3
MENTAL DISEASES	3	3		2		1	3	19	25
Hypochondriasis		1		1				16	17
Insanity	1						1	1	2
Melancholia	1						1	1	2
Dementia	1	1		1		1		1	3
Toxic insanity		1					1		1
DISEASES OF THE EYE	2	16	6	8	2		2	53	71
Conjunctivitis	1	3	3				1	33	37
Keratitis								1	1
Ulcer of cornea		1		1				1	2
Iritis		7	2	3	2			3	10
Atrophy of optic disc or papilla								3	3
Cataract	1	1		1			1		2
Shrunken eyeball		1	1						1
Ametropia								2	2
Diplopia		1		1					1
Stricture of nasal duct		1		1				1	2
Hæmatoma								2	2
Blepharitis								1	1
Stye								2	2
Abscess of eyelid								1	1
Chalazion		1		1				3	4
DISEASES OF THE EAR		10	2	7			1	28	38
Inflammation of the external meatus								1	1
Accumulation of wax								10	10
Inflammation of the middle ear		9	2	6			1	15	24
Perforation of membrana tympani		1		1					1
Tinnitus								2	2
DISEASES OF THE NOSE		1	1					32	33
Epistaxis								1	1
Inflammation								1	1
Nasal catarrh		1	1					25	26
Ulceration								4	4
Ozæna								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

NORTH ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE CIRCULATORY SYSTEM	5	61	1	52	1	2	10	30	96
Pericarditis		2	1	1				1	3
Valvular disease:									
Aortic	2	31		27			6	2	35
Mitral	1	8		9				10	19
Pulmonic		2		1			1		2
Hypertrophy of heart		3		2			1		3
Aneurism of heart		2		1			1		2
Palpitation and irregular action of heart		2		2				8	10
Aneurism of arteries	2	8		7	1	1	1	2	12
Rupture of arteries		1				1			1
Varix		2		2				7	9
DISEASES OF THE RESPIRATORY SYSTEM	3	130	74	46	1	7	5	468	601
Laryngitis:									
Acute		1	1					12	13
Chronic								4	4
Aphonia								1	1
Bronchitis:									
Acute	2	37	31	8				321	360
Chronic		13	4	8		1		72	85
Catarrhal		3	2	1				2	5
Dilatation of bronchii		1		1					1
Spasmodic asthma		10	1	9				19	29
Passive congestion of lung								1	1
Hæmorrhage of lung		4	3	1				1	5
Pneumonia		36	20	8		5	3	3	39
Pneumonic phthisis, chronic		2		2				2	4
Pleurisy:									
Acute		16	7	5	1	1	2	19	35
Chronic	1	6	4	3				8	15
Empyema		1	1						1
Adhesions of pleura								3	3
DISEASES OF THE DIGESTIVE SYSTEM	5	165	104	58	2	4	2	571	741
Stomatitis								3	3
Ulcerative stomatitis								2	2
Noma								1	1
Inflammation of the dental pulp								1	1
Ulceration of the dental pulp								2	2
Caries of dentine and cementum								14	14
Inflammation of dental periosteum								1	1
Abscess of dental periosteum								1	1
Caries of the alveoli		1		1				1	2
Toothache								9	9
Necrosis of alveoli		1	1					8	9
Hypertrophy of tonsils		1	1					3	4
Elongated uvula								1	1
Sore throat	1	1	2					39	41
Quinsy		6	5	1				2	8
Follicular tonsilitis	1	10	10				1	23	34
Ulceration of fauces								1	1
Follicular inflammation of the pharynx		11	7	4				22	33
Post-pharyngeal abscess		1	1						1
Inflammation of the stomach		8	4	3	1			5	13
Ulceration of the stomach		2	2						2
Dyspepsia		21	7	12	1	1		144	165
Gastrodynia		1	1						1
Inflammation of the intestines:									
Catarrhal	2	3	3	2				1	6
Ulcerative		9	8	1				5	14
Ulcer of the intestines								1	1
Hernia		10	5	4		1		54	64
Diarrhœa	1	34	23	11		1		107	142
Constipation		1	1					62	63

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

NORTH ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE DIGESTIVE SYSTEM—Continued.									
Colic		2	1	1				5	7
Hæmorrhage of the rectum		2		2					2
Ulceration of the rectum		2	1				1		2
Piles:									
Internal		8	3	5				10	18
External		9	3	6				27	36
Prolapsus of the rectum		1	1					2	3
Fistula in ano		1	1					1	2
Fissure of the anus		1	1						1
Pruritus ani								1	1
Congestion of the liver		6	3	3					6
Hepatitis								3	3
Cirrhosis of liver		1		1				1	2
Jaundice		6	5	1				4	10
Inflammation of hepatic ducts and gall bladder		1	1					1	2
Gallstones								1	1
Biliary colic								1	1
Ascites		1	1						1
Peritonitis		3	2			1		1	4
DISEASES OF THE LYMPHATIC SYSTEM	2	65	47	16	2		2	49	116
Hypertrophy of lymph-glands		1	1					7	8
Inflammation of lymph-vessels								1	1
Inflammation of lymph-glands	1	40	27	10	2		2	30	71
Suppuration of lymph-glands	1	24	19	6				11	36
DISEASES OF THE THYROID BODY	1			1				2	3
Inflammation	1			1				1	2
Goitre								1	1
DISEASES OF THE SUPRARENAL CAPSULES	1			1					1
Addison's disease	1			1					1
DISEASES OF THE URINARY SYSTEM		28	8	15		4	1	60	88
Acute nephritis		4	2	2				3	7
Bright's disease		15		10		4	1	5	20
Nephralgia		1	1						1
Diabetes insipidus		1		1					1
Hæmaturia								1	1
Lithuria								2	2
Inflammation of bladder:									
Acute		3	2	1				22	25
Subacute								3	3
Chronic		2	2					13	15
Irritability of bladder		2	1	1				2	4
Retention of urine								1	1
Incontinence of urine								8	8
DISEASES OF THE GENERATIVE SYSTEM	8	152	84	65	3	1	7	300	460
Urethritis		2	2					16	18
Gleet								9	9
Urinary abscess								1	1
Ulcer of the urethra		1					1		1
Stricture of urethra, organic	4	54	16	38		1	3	77	135
Urinary fistula		2		2					2
Hypertrophy of prostate gland		1			1			2	3
Acute inflammation of prostate gland		1	1						1
Chronic inflammation of prostate gland								2	2
Inflammation of glans penis		1	1					13	14
Ulcer of penis	4	51	42	11			2	117	172
Phimosis		2	1	1				1	3
Inflammation of the scrotum								1	1
Abscess of the scrotum		1	1						1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

NORTH ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE GENERATIVE SYSTEM—Continued.									
Inflammation of spermatic cord								1	1
Varicocele								11	11
Hydrocele of tunica vaginalis		2	1	1				15	17
Orchitis:									
Acute		10	4	6				13	23
Chronic		1		1				2	3
Epididymitis		19	13	5			1	12	31
Spermatorrhœa		4	2		2			7	11
DISEASES OF THE ORGANS OF LOCOMOTION	2	32	17	15	1		1	24	58
Periostitis		1		1				1	2
Caries		1		1				1	2
Necrosis		6	4		1		1	4	10
Synovitis:									
Acute	2	9	6	5				1	12
Chronic		3	1	2				2	5
Ankylosis		3	1	2					3
Dislocation of articular cartilage		1	1						1
Relaxation of ligaments		1	1					1	2
Atrophy of muscles		1	1						1
Inflammation of tendons								3	3
Inflamed bursa		3	1	2				8	11
Bursal abscess		1		1					1
Thecal abscess		1	1					2	3
Bunion		1		1				1	2
DISEASES OF THE CONNECTIVE TISSUE	6	22	24	2	1		1	64	92
Œdema								1	1
Inflammation		3	2				1	23	26
Abscess	6	19	22	2	1			40	65
DISEASES OF THE SKIN	5	80	52	27	1		5	293	378
Erythema		2	2					6	8
Urticaria								5	5
Eczema	1	6	4	2			1	50	57
Impetigo		1	1					1	2
Rupia								1	1
Ecthyma								1	1
Pityriasis								1	1
Lichen		1		1					1
Psoriasis		1		1				5	6
Herpes		2	1	1				17	19
Zona		2	2					3	5
Acne								6	6
Gutta rosea								1	1
Sycosis								2	2
Alopecia								1	1
Frostbite	1	6	4	3				13	20
Ulcer	1	26	12	12			3	75	102
Fissures								3	3
Boil	1	19	17	2			1	56	76
Carbuncle		5	4	1				5	10
Gangrene	1			1				4	5
Whitlow		7	5	2				26	33
Onychia								1	1
Corn		1		1				1	2
Wen								6	[illegible]
Pruritis		1			1			2	3
Hyperidrosis								1	1
PARASITIC DISEASES OF THE SKIN		11	6	5				52	63
Ringworm		1	1					10	11
Favus								2	2
Tinea versicolor								1	1

Table VII.—Tabular Statement, by Districts, of Diseases and Injuries Treated during the Year ended June 30, 1894—Continued.

NORTH ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
Parasitic Diseases of the Skin—Cont'd.									
Itch		10	5	5				36	46
Phthiriasis								1	1
Unclassified								2	2
Poisons								**3**	**3**
Potash								1	1
Vegetable poisons								2	2
Injuries	**11**	**251**	**176**	**65**	**3**	**1**	**17**	**468**	**730**
General Injuries	1	10	10	1				45	56
Burns and scalds	1	5	5	1				15	21
Effects of cold		1	1					28	29
Multiple injury		4	4					2	6
Local Injuries	10	241	166	64	3	1	17	423	674
Strain of muscles	1	1	1	1				22	24
Rupture of muscles		1	1						1
Bruise of muscles		1		1				1	2
Rupture of tendons		2	1	1					2
Abrasion								4	4
Foreign body in subcutaneous tissue								2	2
Scalp wound:									
Bone not exposed		3	1	2				9	12
Bone exposed		2	2					5	7
Fracture of the vault of the skull		2	1			1			2
Concussion of brain		2	2					3	5
Contusion of face		5	4				1	3	8
Wound of face and mouth		9	7	2				10	19
Fracture of facial bones		6	4	1			1	1	7
Contusion of the eye		1	1						1
Foreign body in cornea or conjunctiva								3	3
Wound of eyelid								2	2
Wound of the cornea		1	1						1
Contusion of pinna								1	1
Rupture of membrana tympani		1	1					2	3
Contusion of the chest		3	3					15	18
Fracture of the ribs		11	6	4			1	7	18
Wound of parietes of chest	1		1						1
Contusion of back		18	14	4				16	34
Sprain of back		4	3	1				11	15
Wound of back		1	1					1	2
Concussion of cord		1	1						1
Contusion of abdomen		3	2	1				3	6
Contusion of the urethra, perineum, scrotum, and penis								1	1
Contusion of upper extremities	1	21	13	8	1			31	53
Sprain of the shoulder								3	3
Sprain of the elbow								6	6
Sprain of the wrist		5	3	2				21	26
Sprain of the fingers								2	2
Wound of the upper extremities	1	40	30	9			2	137	178
Fracture of the clavicle		2	1	1					2
Fracture of the scapula								2	2
Fracture of the humerus		3	1	1			1		3
Fracture of the radius		2	1	1					2
Fracture of both bones of forearm		1			1				1
Fracture of carpus, metacarpus, and phalanges		4	2	1			1	4	8
Dislocation of the clavicle		3		3				2	5
Dislocation of the humerus		5	4	1				4	9
Dislocation of the ulna								1	1
Dislocation of the radius and ulna	1	1	1	1				1	3
Dislocation of the metacarpus								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

NORTH ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Injuries—Continued.									
LOCAL INJURIES—Continued.									
Dislocation of the phalanges of thumb		1		1					1
Dislocation of the phalanges of fingers								2	2
Contusion of the lower extremities	1	17	14	4				40	58
Sprain of the hip								1	1
Sprain of the knee		2	1	1				6	8
Sprain of the ankle	1	16	12	2			3	17	34
Sprain of the foot								1	1
Wound of the lower extremities	1	12	10	2			1	13	26
Fracture of femur		3	1	1			1	1	4
Fracture of cervix femoris		2	1				1		2
Fracture of patella		1			1				1
Fracture of leg, both bones	2	5	4	2			1	2	9
Fracture of tibia alone		8	4	3			1		8
Fracture of fibula alone		5	2	2			1	2	7
Fracture of phalanges of toes		1	1						1
Dislocation of the femur at the hip		1	1						1
Dislocation of the knee		1					1		1
Dislocation of the foot at the ankle								1	1
Dislocation of the metatarsus and phalanges		1	1						1

MIDDLE ATLANTIC.

Diseases.	Remaining under treatment from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
TOTAL CASES	**138**	**1,850**	**1,145**	**532**	**82**	**83**	**146**	**4,825**	**6,813**
General Diseases	**60**	**859**	**528**	**255**	**36**	**36**	**64**	**2,171**	**3,090**
Smallpox		2	2					3	5
Chicken-pox								1	1
Measles	1	4	5						5
Epidemic rose rash								1	1
Scarlet fever		1	1						1
Influenza		46	38	8				23	69
Mumps		4	4					7	11
Diphtheria		2	2						2
Enteric fever	4	43	39			7	1		47
Typho-malarial fever		1				1			1
Dysentery		10	7	1		2		23	33
Malarial intermittent fever	8	211	194	11	2	3	9	341	560
Malarial remittent fever	1	16	15	1			1	9	26
Malarial cachexia	1	24	17	7	1			38	63
Phagedæna	1	1	1	1					2
Erysipelas:									
Simple		3	3					1	4
Phlegmonous		4	3			1			4
Syphilis:									
Primary	2	12	5	7			2	12	26
Secondary	6	92	16	66	6	1	9	504	602
Gonorrhœa	4	32	12	20	1		3	568	604
Fissure of urethra		2		1	1				2
Animal parasites		5	3	2				3	8
Scurvy		1	1					1	2
Alcoholism		19	14	4	1			20	39
Debility		3	1	1			1	65	68
Rheumatic fever	5	28	20	10		1	2	3	36
Rheumatism	15	197	117	78	2	2	13	464	676
Gout		1		1					1
Osteo-arthritis	1						1		1
Cysts		3	2				1	1	4
Nonmalignant new growth		10	5	4		1		23	33
Malignant new growth		2			1		1	1	3
Tubercle	11	76		29	21	17	20	42	129
Purpura								3	8
Anæmia		4	1	3				14	13

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

MIDDLE ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases	**62**	**780**	**465**	**226**	**39**	**42**	**70**	**2,256**	**3,098**
DISEASES OF THE NERVOUS SYSTEM	9	49	11	27	5	4	11	105	163
Congestion, cerebral		1	1						1
Hæmorrhage, cerebral	2	4		4			2	4	10
Neuritis		1			1				1
Sclerosis	1		1						1
Progressive muscular atrophy	1					1			1
Spastic spinal paralysis	1						1		1
Locomotor ataxy	2	2		2	1		1	3	7
Paralysis		2					2		2
Hemiplegia	1	10		4	3	2	2		11
Local paralysis		1		1					1
Anæsthesia		3	1	2				3	6
Eclampsia		1				1			1
Aphasia								2	2
Neuralgia		5	3	1			1	60	65
Facial		4	3	1				17	21
Sciatica	1	7	1	7				6	14
Vertigo								5	5
Megrim		1	1						1
Epilepsy		6		4			2	5	11
Hysteria		1		1					1
MENTAL DISEASES	1	2		1			2		3
Melancholia	1	2		1			2		3
DISEASES OF THE EYE		13	6	6			1	36	49
Conjunctivitis		3	3					23	26
Keratitis		2	1	1				1	3
Ulcer of cornea		1		1				1	2
Staphyloma		1		1					1
Iritis		3	1	2				8	11
Ametropia								1	1
Night-blindness		1	1						1
Blepharitis								2	2
Trichiasis		1		1					1
Entropion		1					1		1
DISEASES OF THE EAR		14	8	5	1			25	39
Inflammation of the external meatus, acute								1	1
Abscess of the external meatus		1	1						1
Inflammation of the middle ear		13	7	5	1			19	32
Deafness								5	5
DISEASES OF THE NOSE		1		1				10	11
Epistaxis								2	2
Nasal catarrh								5	5
Ulceration								2	2
Ozæna		1		1				1	2
DISEASES OF THE CIRCULATORY SYSTEM	6	45	3	31	6	5	6	34	85
Pericarditis		1		1				1	2
Valvular disease:									
Aortic	1	11		6	4	1	1	2	14
Mitral	3	18		13	2	2	4	14	35
Hypertrophy of heart		3		3					3
Angina pectoris								1	1
Palpitation and irregular action of heart	1	7	1	6		1		13	21
Aneurism of arteries	1	1	2						2
Phlebitis		1				1			1
Varix		3		2			1	3	6
DISEASES OF THE RESPIRATORY SYSTEM	12	142	81	34	10	24	5	621	775
Laryngitis:									
Acute	1	2	3					11	14
Chronic	1			1					1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

MIDDLE ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE RESPIRATORY SYSTEM—Continued.									
Bronchitis:									
Acute	2	43	39	4		2		528	573
Chronic	3	32	12	16	1	3	3	45	80
Spasmodic asthma		9	2	5		2		12	21
Hæmorrhage of lung								1	1
Pneumonia	2	21	14	1		8			23
Pneumonic phthisis:									
Acute	2	17		5	9	4	1	6	25
Chronic								2	2
Pleurisy:									
Acute		15	11			4		6	21
Chronic	1	3		2		1	1	10	14
DISEASES OF THE DIGESTIVE SYSTEM	13	146	112	30	3	6	8	596	755
Ulcer of the lips		1		1				2	3
Stomatitis		1	1					8	9
Caries of dentine and cementum								6	6
Abscess of dental periosteum	1	1	1	1				1	3
Ulceration of gums and alveoli								3	3
Toothache								3	3
Ulcer of the tongue								1	1
Sore throat		1	1					25	26
Quinsy		6	6						6
Follicular tonsilitis		12	12					29	41
Follicular inflammation of the pharynx		3	2	1				17	20
Inflammation of the stomach		21	15	3	1	1	1	11	32
Ulceration of the stomach		2	1	1					2
Dyspepsia		8	4	2	1	1		163	171
Hæmorrhage of the intestines		1	1						1
Inflammation of the intestines:									
Catarrhal		1		1					1
Ulcerative	1	2	3					4	7
Obstruction of the intestines		2	2						2
Hernia	1	4	1	2	1		1	127	132
Diarrhœa	2	41	36	3		1	3	105	148
Constipation	1	1	1	1				52	54
Ulceration of the rectum		1		1					1
Ulceration of the anus		5	1	4				7	12
Piles, internal	1	5	3	3				22	28
Prolapsus of the rectum	1	2	1			1	1		3
Stricture of the rectum		1					1		1
Fistula in ano	2	3	4	1				3	8
Atrophy of the liver		1		1					1
Congestion of the liver	1	1		1			1	3	5
Hepatitis		3	2	1					3
Perihepatitis		1	1						1
Cirrhosis of liver	1	2	2			1			3
Jaundice	1	10	9	2				4	15
Ascites		1				1			1
Peritonitis		2	2						2
DISEASES OF THE LYMPHATIC SYSTEM	3	100	67	24	4		8	114	217
Inflammation of lymph-vessels	3	53	37	14	1		4	101	157
Suppuration of lymph-vessels		47	30	10	3		4	13	60
DISEASES OF THE URINARY SYSTEM	4	26	11	11	3	3	2	43	73
Congestion of kidney	1	1	1	1				1	3
Acute nephritis		13	6	5	1	1		4	17
Bright's disease	3	7		5	1	2	2	6	16
Movable kidney								1	1
Calculus in kidney								3	3
Hæmaturia		1	1					2	3
Hæmorrhage of bladder		1	1						1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

MIDDLE ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE URINARY SYSTEM—Continued.									
Inflammation of bladder:									
Acute		1	1					19	20
Subacute								1	1
Chronic		1			1			5	6
Incontinence of urine		1	1					1	2
DISEASES OF THE GENERATIVE SYSTEM	3	109	76	28	3		5	335	447
Urethritis		3	2	1				8	11
Gleet		1		1				4	5
Stricture of urethra, organic		20	10	9			1	56	76
Urinary fistula		2	1	1					2
Extravasation of urine								1	1
Impacted calculus of urethra								1	1
Hypertrophy of prostate gland								1	1
Acute inflammation of prostate gland								3	3
Inflammation of glans penis		2	2					5	7
Ulcer of penis	2	42	31	10	1		2	189	233
Phimosis		6	6						6
Paraphimosis		2	2					1	3
Chordee								1	1
Varicocele		2		2				12	14
Hæmatocele of tunica vaginalis								1	1
Hydrocele of tunica vaginalis		6	3	2			1	2	8
Orchitis:									
Acute		14	13	1				41	55
Chronic		2			2				2
Epididymitis	1	7	6	1			1	4	12
Spermatorrhœa								2	2
Impotence								2	2
Inflammation of the vagina								1	1
DISEASES OF THE ORGANS OF LOCOMOTION	4	21	11	7			7	23	48
Periostitis		2	1				1	7	9
Necrosis	1	6	4	2			1		7
Synovitis, chronic	1	5	3	1			2	7	13
Ankylosis	1			1					1
Loose body in joint								1	1
Psoas, lumbar, and other abscesses		1					1		1
Caries and necrosis of spine	1						1		1
Atrophy of muscles		2		2				1	3
Abscess of muscles		1					1		1
Inflammation of tendon								3	3
Contraction of tendons and fasciæ								1	1
Flat-foot								2	2
Inflamed bursa		4	3	1					
Bursal abscess									4
Bunion								1	1
DISEASES OF THE CONNECTIVE TISSUE	2	36	27	4			7	35	73
Œdema		2	2						2
Inflammation	1	5	5				1	11	17
Abscess	1	29	20	4			6	24	54
DISEASES OF THE SKIN	5	74	52	16	3		8	244	323
Urticaria								2	2
Eczema		6	3	2	1			54	60
Pityriasis		1	1						1
Psoriasis								4	4
Miliaria		1					1		1
Herpes		1	1					6	7
Zona								6	6
Pemphigus								1	1
Acne								4	4
Frostbite	1	4	4	1				3	8

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

MIDDLE ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE SKIN—Continued.									
Ulcer	2	47	30	11	1		7	88	137
Boil	1	5	6					56	62
Carbuncle	1	4	4	1				7	12
Whitlow		2	2					11	13
Onychia		3	1	1	1			2	5
PARASITIC DISEASES OF THE SKIN		2		1	1			35	37
Ringworm		1		1				2	3
Itch								32	32
Phthiriasis								1	1
Unclassified		1			1				1
Poisons								7	7
Metals and their salts								2	2
Vegetable poisons								2	2
Poisonous gases and vapors								3	3
POISONED WOUNDS		2	1	1					2
Venomous animals		2	1	1					2
Injuries	**16**	**209**	**151**	**50**	**7**	**5**	**12**	**391**	**616**
GENERAL INJURIES	1	16	10	4	1	1	1	34	51
Burns and scalds	1	13	7	4	1	1	1	31	45
Effects of cold		1	1					1	2
Heat stroke		2	2					2	4
LOCAL INJURIES	15	193	141	46	6	4	11	357	565
Compression of nerves								1	1
Division of nerve		1		1					1
Wound of glands								10	10
Strain of muscles								1	1
Rupture of muscles		1	1						1
Strain of tendons								1	1
Abrasion of skin		1	1					5	6
Contusion of scalp		2	2					4	6
Scalp wound:									
Bone not exposed		9	8	1				9	18
Bone exposed	1		1					1	2
Contusion of skull		1	1						1
Fracture of the vault of the skull		1					1		1
Contusion of face	1	1	2					13	15
Wound of face and mouth		5	5					5	10
Fracture of facial bones		5	4				1	3	8
Contusion of the eye		1						2	2
Foreign body in cornea or conjunctiva								2	2
Wound of neck		1	1					1	2
Contusion of the chest		10	5	4		1		11	21
Fracture of the ribs	1	6	5	1		1		7	14
Contusion of back	1	7	6	2				17	25
Sprain of back		7	6				1	6	13
Concussion of cord		1					1		1
Contusion of abdomen		1	1					3	4
Wound of the urethra, perineum, scrotum, and penis								1	1
Contusion of upper extremities	1	17	11	6			1	40	58
Sprain of the shoulder		6	3	3				3	9
Sprain of the elbow								3	3
Sprain of the wrist	1	3	1	3				15	19
Sprain of the fingers		1	1					1	2
Wound of the upper extremities		12	8	3	1			91	103
Fracture of the clavicle		4	3		1			2	6
Fracture of the humerus		3	1		1		1		3
Fracture of the radius		3	1	2				3	6

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

MIDDLE ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Injuries—Continued.									
LOCAL INJURIES—Continued.									
Fracture of the ulna	......	1	1	......	......	....	......	2	3
Fracture of both bones of forearm	1	6	3	3	......	....	1	2	9
Fracture of carpus, metacarpus, and phalanges	......	6	4	1	1	....	......	3	9
Dislocation of the scapula	......	1	......	......	1	....	......	......	1
Dislocation of the humerus	......	3	2	......	1	....	......	1	4
Dislocation of the radius and ulna	......	......	......	......	......	....	......	1	1
Contusion of the lower extremities	3	21	17	4	......	1	2	24	48
Sprain of the hip	......	1	1	......	......	....	......	......	1
Sprain of the knee	......	13	9	4	......	....	......	11	24
Sprain of the ankle	......	10	9	1	......	....	......	12	22
Wound of the lower extremities	2	11	10	3	......	....	......	36	49
Fracture of femur	1	3	1	2	......	1	......	......	4
Fracture of patella	......	......	......	......	......	....	......	1	1
Fracture of leg, both bones	......	4	3	......	......	....	1	......	4
Fracture of tibia alone	......	2	2	......	......	....	......	......	2
Fracture of fibula alone	1	2	......	2	......	....	1	2	5
Fracture of tarsus	1	......	1	......	......	....	......	......	1
Dislocation of the knee	......	......	......	......	......	....	......	1	1

SOUTH ATLANTIC.

Diseases.	Remaining under treatment from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
TOTAL CASES	**137**	**1,810**	**1,162**	**539**	**44**	**78**	**124**	**6,479**	**8,426**
General Diseases	**56**	**951**	**628**	**272**	**18**	**43**	**46**	**3,215**	**4,222**
Cowpox	......	......	......	......	......	....	......	76	76
Measles	2	3	5	......	......	...	......	2	7
Epidemic rose rash	......	1	1	......	......	....	......	......	1
Influenza	......	80	56	22	......	2	......	247	327
Mumps	......	3	3	......	......	....	......	9	12
Diptheria	......	1	1	......	......	....	......	......	1
Simple continued fever	......	2	2	......	......	....	......	1	3
Enteric fever	3	26	18	1	......	6	4	1	30
Typho-malarial fever	......	1	......	......	......	1	......	......	1
Yellow fever	......	1	1	......	......	....	......	......	1
Sporadic cholera	1	1	1	......	......	....	1	2	4
Dysentery	5	36	27	7	1	3	3	66	107
Malarial intermittent fever	10	274	269	9	1	....	5	785	1,069
Malarial remittent fever	4	123	103	13	1	9	1	61	188
Malarial cachexia	......	5	2	3	......	....	......	73	78
Beri-beri	......	1	......	1	......	....	......	......	1
Erysipelas:									
Simple	......	4	3	1	......	....	......	10	14
Phlegmonous	......	1	......	1	......	....	......	......	1
Syphilis:									
Primary	1	22	8	14	1	....	......	76	99
Secondary	8	124	4	110	......	3	15	273	405
Gonorrhœa	2	38	25	11	......	....	4	788	828
Animal parasites	......	1	......	1	......	....	......	6	7
Effects of excessive venery	......	......	......	......	......	....	......	2	2
Surfeit	......	......	......	......	......	....	......	1	1
Scurvy	......	......	......	......	......	....	......	2	2
Alcoholism	1	6	6	......	......	....	1	2	9
Delirium tremens	......	1	1	......	......	....	......	......	1
Malposition of testicles	......	1	......	1	......	....	......	......	1
Debility	1	6	4	3	......	....	......	52	59
Rheumatic fever	3	30	17	16	......	....	......	16	49
Rheumatism	7	100	66	29	7	2	3	529	636
Gout	......	......	......	......	......	....	......	2	2
Osteo-arthritis	......	2	1	1	......	....	......	1	3
Nonmalignant new growth	......	2	2	......	......	....	......	17	19

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

SOUTH ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
General Diseases—Continued.									
Malignant new growth	1	2			1	1	1	1	4
Tubercle	7	49	1	26	6	16	7	88	144
Scrofula		1					1	1	2
Anæmia		3	1	2				25	28
Local Diseases	**65**	**635**	**362**	**211**	**21**	**33**	**73**	**2,924**	**3,624**
DISEASES OF THE NERVOUS SYSTEM	10	53	28	19	1	2	13	214	277
Congestion, cerebral		2	1			1			2
Myelitis	2	1		1			2		3
Neuritis	1	1	1				1	3	5
Abscess of the brain		1				1			1
Sclerosis								2	2
Locomotor ataxy								1	1
Paralysis		2		1			1		2
Hemiplegia	4	3		4			3	2	9
Paraplegia	2	1		1			2	1	4
Local paralysis		2		2				5	7
Anæsthesia								1	1
Spasm of muscle								5	5
Wry neck								3	3
Hyperæsthesia								2	2
Neuralgia		16	14	2				108	124
Facial		2	2					27	29
Sciatic		13	6	4			3	5	18
Vertigo	1	5	3	2			1	7	13
Megrim		1	1					18	19
Epilepsy		3		2	1			23	26
Hysteria								1	1
MENTAL DISEASES	25	2	2		2	2	21	3	30
Hypochondriasis								2	2
Insanity								1	1
Mania	11		1				10		11
Melancholia	9	1			1	1	8		10
Dementia	3	1	1		1		2		4
General paralysis of the insane	2					1	1		2
DISEASES OF THE EYE	1	10	5	5			1	43	54
Conjunctivitis		3	3					25	28
Keratitis		4	1	3				2	6
Ulcer of cornea		1		1				1	2
Iritis		1		1				5	6
Cataract	1						1		1
Ametropia								2	2
Night-blindness		1	1					1	2
Day-blindness								1	1
Amblyopia								1	1
Amaurosis								1	1
Stricture of nasal duct								1	1
Epiphora								1	1
Stye								2	2
DISEASES OF THE EAR		3	3					27	30
Inflammation of the external meatus, acute								2	2
Abscess of the external meatus								1	1
Accumulation of wax								8	8
Inflammation of the middle ear		3	3					7	10
Ulceration of membrana tympani								3	3
Deafness								6	6
DISEASES OF THE NOSE		1		1				60	61
Hypertrophy								1	1
Epistaxis								3	3
Inflammation								3	3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

SOUTH ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE NOSE—Continued.									
Nasal catarrh		1		1				48	49
Ulceration								4	4
Ozæna								1	1
DISEASES OF THE CIRCULATORY SYSTEM	2	20	1	10	3	3	5	59	81
Hydropericardium								1	1
Endocarditis		1		1				2	3
Valvular disease:									
Aortic		1		1				6	7
Mitral	1	10		6	1	2	2	23	34
Hypertrophy of heart								1	1
Inflammation of heart								3	3
Dilatation of heart	1					1			1
Cyanosis								1	1
Angina pectoris		1		1				1	2
Syncope								1	1
Palpitation and irregular action of heart								7	7
Degeneration of arteries		2		1			1		2
Dilatation of arteries		4			2		2	12	16
Phlebitis		1	1						1
Varix								1	1
DISEASES OF THE RESPIRATORY SYSTEM	4	106	57	34	4	10	5	572	682
Laryngitis:									
Acute		2		2				13	15
Catarrhal		1	1						1
Bronchitis:									
Acute		49	34	12	2		1	473	522
Chronic		2		2				49	51
Catarrhal		3	1	1			1	19	22
Spasmodic asthma		4	1	2		1		6	10
Passive congestion of lung		1		1					1
Hæmorrhage of lung		3	2			1		4	7
Pneumonia		17	10	2		4	1		17
Abscess of lung		1		1					1
Pneumonic phthisis:									
Acute	1			1					1
Chronic	2	13		8	2	4	1	1	16
Emphysema								1	1
Plurisy:									
Acute		8	6	1			1	5	13
Chronic		1	1					1	2
Empyema	1	1	1	1					2
DISEASES OF THE DIGESTIVE SYSTEM	3	91	60	21	3	5	5	955	1,049
Ulcer of the lips		1			1				1
Fissure of the lips								1	1
Stomatitis								9	9
Ulcerative stomatitis								1	1
Noma								1	1
Caries of dentine and cementum								23	23
Abscess of dental periosteum		1	1					4	5
Inflammation of gums and alveoli								4	4
Ulceration of gums and alveoli								2	2
Toothache								15	15
Inflammation of the tongue								2	2
Ulcer of the tongue								1	1
Elongated uvula								3	3
Sore throat		1	1					61	62
Quinsy		4	4					2	6
Follicular tonsilitis		6	4	2				31	37
Ulceration of fauces		1	1						1
Stricture of the fauces								1	1
Follicular inflammation of pharynx								17	17
Hæmorrhage of the stomach		1			1				1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

SOUTH ATLANTIC—Continued.

Diseases.	Number of cases.								
			Discharged.						
	Remaining under treatment from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
Local Diseases—Continued.									
DISEASES OF THE DIGESTIVE SYSTEM—Continued.									
Inflammation of the stomach		6	4			2		42	48
Dyspepsia		1	1					176	177
Gastrodynia		3	3					2	5
Vomiting								1	1
Inflammation of the intestines:									
Catarrhal		6	5				1	17	23
Ulcerative		8	3	4			1	7	15
Obstruction of the intestines		1		1					1
Intussusception		1				1			1
Hernia		3	1	2				77	80
Diarrhœa	1	24	20	4		1		175	200
Constipation								151	151
Colic		3	2	1				34	37
Hæmorrhage of the rectum								1	1
Abscess of the rectum		1	1						1
Ulceration of the rectum								2	2
Piles:									
Internal		4	1	2			1	27	31
External	1	3	1	3				23	27
Fistula in ano		4	3	1				5	9
Pruritus ani								4	4
Congestion of the liver		1	1					4	5
Hepatitis	1						1	12	13
Cirrhosis of liver		1					1		1
Abscess of liver		1			1			1	2
Lardaceous liver		1				1			1
Jaundice		2	2					6	8
Inflammation of hepatic ducts and gall-bladder								1	1
Obstruction of hepatic ducts and gall-bladder								1	1
Gallstones								1	1
Biliary colic								7	7
Ascites		1		1					1
Peritonitis		1	1						1
DISEASES OF THE LYMPHATIC SYSTEM	5	66	43	26	1		1	84	155
Hypertrophy of the spleen								1	1
Hypertrophy of lymph-glands								1	1
Inflammation of lymph-vessels		1		1				1	2
Inflammation of lymph-glands	4	39	29	13			1	58	101
Suppuration of lymph-glands	1	26	14	12	1			23	50
DISEASES OF THE URINARY SYSTEM	1	31	10	11	2	7	2	60	92
Congestion of kidney								1	1
Acute nephritis		8	3	2	1	1	1	4	12
Bright's disease	1	10		5	1	4	1	3	14
Pyelitis								1	1
Calculus in kidney		1				1			1
Calculus in ureter		2	2					1	3
Nephralgia		1	1					1	2
Diabetes insipidus								1	1
Hæmaturia								6	6
Lithuria								5	5
Phosphuria								1	1
Hæmorrhage of bladder								1	1
Inflammation of bladder:									
Acute		6	3	2		1		16	22
Subacute		1		1				13	14
Chronic		1		1				2	3
Irritability of bladder								1	1
Retention of urine								2	2
Incontinence of urine		1	1					1	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

SOUTH ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.				Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved	Not improved.	Died.			
Local Diseases—Continued.									
DISEASES OF THE GENERATIVE SYSTEM	6	130	84	40	2	3	7	328	464
Urethritis								10	10
Gleet								8	8
Stricture of urethra:									
Organic	1	27	5	18		2	3	46	74
Spasmodic		1		1				1	2
Impacted calculus of urethra		1				1		1	2
Hypertrophy of prostate gland		1			1			2	3
Acute inflammation of prostate gland		1		1					1
Chronic inflammation of prostate gland								1	1
Œdema of the penis								2	2
Inflammation of the penis								1	1
Inflammation of glans penis		1	1					7	8
Abscess of penis								1	1
Ulcer of penis	3	52	44	8	1		2	180	235
Phimosis	1	3	3				1	3	7
Varicocele								4	4
Hæmatocele of tunica vaginalis		1	1						1
Hydrocele of tunica vaginalis		2		2				11	13
Orchitis:									
Acute		29	24	4			1	30	59
Chronic								3	3
Epididymitis	1	6	5	2				6	13
Abscess of testicle		3	1	2					3
Spermatorrhœa		1		1				5	6
Impotence								5	5
Displacement and distortion of the uterus								1	1
Dysmenorrhœa		1		1					1
DISEASES OF THE ORGANS OF LOCOMOTION	3	14	6	8			3	30	47
Ostitis	1		1						1
Periostitis		1	1					5	6
Caries		1		1					1
Necrosis	1	7	2	4			2	3	11
Synovitis:									
Acute		2	1	1				5	7
Chronic								2	2
Ankylosis	1	1	1				1	1	3
Psoas, lumbar, and other abscesses		1		1					1
Abscess of muscles		1		1				5	6
Inflammation of tendons								3	3
Inflamed bursa								4	4
Bunion								1	1
Ganglion								1	1
DISEASES OF THE CONNECTIVE TISSUE	1	37	21	11	1	1	4	47	85
Œdema								1	1
Inflammation		6	4				2	7	13
Abscess	1	31	17	11	1	1	2	39	71
DISEASES OF THE SKIN	4	63	38	22	1		6	373	440
Erythema								15	15
Urticaria								9	9
Eczema		4	1	3				79	83
Intertrigo								1	1
Rupia		1		1					1
Pityriasis		1	1						1
Prurigo								1	1
Lichen								1	1
Psoriasis								3	3
Miliaria								3	3
Herpes								17	17
Zona	1			1				4	5
Pemphigus								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued

SOUTH ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE SKIN—Continued.									
Acne								5	5
Sycosis								8	8
Alopecia								2	2
Chilblain								2	2
Frostbite	1	6	5	1			1	2	9
Ulcer	1	25	12	10	1		3	95	121
Fissures								4	4
Boil		12	7	4			1	79	91
Carbuncle		5	5					3	8
Gangrene		2	2						2
Whitlow	1	5	3	2			1	22	28
Onychia		1	1					2	3
Corn								3	3
Wen		1	1					3	4
Pruritus								9	9
PARASITIC DISEASES OF THE SKIN		8	4	3	1			69	77
Ringworm								10	10
Favus								1	1
Itch		5	2	3				39	44
Phthiriasis								16	16
Unclassified		3	2		1			2	5
Poisons		**2**		**2**				**2**	**4**
Metals and their salts		1		1					1
Organic substances		1		1				1	2
Poisonous gases and vapors								1	1
POISONED WOUNDS								1	1
Venomous animals								1	1
Injuries	**16**	**222**	**172**	**54**	**5**	**2**	**5**	**337**	**575**
GENERAL INJURIES		20	13	6		1		27	47
Burns and scalds		14	10	4				16	30
Effects of cold								4	4
Heat stroke		5	3	1		1		5	10
Multiple injury		1		1				1	2
Privation								1	1
LOCAL INJURIES	16	202	159	48	5	1	5	310	528
Strain of muscles	1	3	4					16	20
Rupture of tendons								1	1
Abrasion of skin								8	8
Foreign body in subcutaneous tissue								1	1
Contusion of scalp		1		1				1	2
Scalp wound:									
Bone not exposed		11	8	3				19	30
Bone exposed		3		2			1		3
Contusion of skull		1		1					1
Fracture of the vault of the skull	1		1						1
Concussion of brain		1	1						1
Contusion of face		4	4						4
Wound of face and mouth		8	6	2				10	18
Fracture of facial bones		2	1	1				2	4
Contusion of the eye		1	1					2	3
Foreign body in cornea or conjunctiva								5	5
Wound of eyelid								2	2
Wound of the sclerotic		2	1	1					2
Foreign body in external meatus								1	1
Wound of neck								1	1
Contusion of the chest		10	9			1		6	16
Fracture of the ribs		5	3	1			1	2	7
Wound of parietes of chest		2	2						2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

SOUTH ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Injuries—Continued.									
LOCAL INJURIES—Continued.									
Contusion of back		2	2					7	9
Sprain of back	1	1	2					4	6
Concussion of cord								1	1
Contusion of abdomen								3	3
Wound of parietes of abdomen		1	1						1
Contusion of the urethra, perineum, scrotum, and penis								2	2
Wound of the urethra, perineum, scrotum, and penis		3	3					2	5
Fracture and dislocation of pelvis		1	1						1
Contusion of testicle		2	2					1	3
Contusion of upper extremities		6	3	3				25	31
Sprain of the shoulder								1	1
Sprain of the elbow								3	3
Sprain of the wrist	1	2	3					12	15
Sprain of the fingers								2	2
Wound of the upper extremities	1	44	33	11	1			101	146
Wound of joint, upper extremities								1	1
Fracture of the clavicle		1	1					2	3
Fracture of the humerus		7	3	1	2		1		7
Fracture of the radius		1					1	2	3
Fracture of the ulna		4	3	1				2	6
Fracture of both bones of forearm	2	7	4	4	1				9
Fracture of carpus, metacarpus, and phalanges		4	2	2				4	8
Dislocation of the humerus		1	1						1
Dislocation of the carpus								1	1
Contusion of the lower extremities	1	14	14	1				23	38
Sprain of the knee		6	4	1	1			4	10
Sprain of the ankle	4	14	17	1				6	24
Wound of the lower extremities		18	9	8			1	22	40
Fracture of femur		1	1						1
Fracture of patella		1		1				1	2
Fracture of leg, both bones	3	4	6	1					7
Fracture of tibia alone	1	3	3	1					4
Dislocation of the foot at the ankle								1	1

THE GULF.

TOTAL CASES	**67**	**1,314**	**803**	**456**	**17**	**33**	**72**	**3,902**	**5,283**
General Diseases	**31**	**671**	**402**	**249**	**9**	**14**	**28**	**1,706**	**2,408**
Influenza		37	33	2	1	1		95	132
Mumps		1	1					1	2
Simple continued fever		1	1					2	3
Enteric fever		6	5			1			6
Typho-malarial fever	1	1	2						2
Sporadic cholera		1					1	3	4
Dysentery	1	33	27	3		3	1	43	77
Malarial intermittent fever	8	195	183	16	1	1	2	353	556
Malarial remittent fever	1	45	40				6	31	77
Malarial cachexia		7	6	1				62	69
Erysipelas, simple	1		1					4	5
Pyæmia								1	1
Syphilis:									
Primary	2	40	5	32	1		4	47	89
Secondary	8	96		91	4	1	8	269	373
Gonorrhœa		19	16	3				311	330
Animal parasites								4	4
Effects of excessive venery								1	1
Scurvy		1		1				2	3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE GULF—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
General Diseases—Continued.									
Alcoholism	1	7	6	1		1		4	12
Debility	1	4	4			1		13	18
Rheumatic fever		13	10	2			1	2	15
Rheumatism	5	125	58	69	1		2	384	514
Nonmalignant new growth		5	3	2				7	12
Malignant new growth		2		1			1	4	6
Tubercle	2	29		23	1	5	2	36	67
Scrofula		1		1				2	3
Purpura		1	1						1
Anæmia		1		1				25	26
Local Diseases	**28**	**457**	**262**	**167**	**7**	**17**	**32**	**1,842**	**2,327**
DISEASES OF THE NERVOUS SYSTEM	1	18	8	8		1	2	90	109
Spinal meningitis	1						1		1
Neuritis								5	5
Paralysis		3		2		1		11	14
Hemiplegia		3	1	2					3
Local paralysis		1	1					2	3
Spasm of muscles		1		1				6	7
Paralysis agitans		1		1					1
Neuralgia		3	2	1				32	35
Facial		4	3				1	12	16
Sciatica								3	3
Vertigo								6	6
Megrim		1	1					11	12
Epilepsy		1		1				2	3
MENTAL DISEASES	2	2		1		1	2	2	6
Hypochondriasis								1	1
Insanity	1						1		1
Mania	1						1		1
Melancholia		1		1				1	2
Dementia		1				1			1
DISEASES OF THE EYE	3	9	6	4	1		1	53	65
Conjunctivitis	1	1	1		1			41	43
Pterygium	1	1	1	1				3	5
Keratitis								3	3
Iritis		3	2	1				5	8
Retinitis		1		1					1
Cataract	1		1						1
Panophthalmitis		2	1	1				1	3
Blepharitis		1					1		1
DISEASES OF THE EAR		6	4	2				27	33
Inflammation of the external meatus, acute		1	1					5	6
Abscess of the external meatus								6	6
Accumulation of wax								6	6
Inflammation of the middle ear		5	3	2				9	14
Tinnitus								1	1
DISEASES OF THE NOSE		1		1				13	14
Inflammation								2	2
Nasal catarrh								11	11
Necrosis		1		1					1
DISEASES OF THE CIRCULATORY SYSTEM	1	21	1	18		1	2	60	82
Pericarditis		1		1					1
Valvular disease:									
Aortic		1		1				8	9
Mitral		14		12			2	30	44
Angina pectoris								6	[illegible]
Palpitation and irregular action of heart		1	1					16	17

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE GULF—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE CIRCULATORY SYSTEM—Continued.									
Degeneration of arteries		1		1					1
Aneurism of arteries	1	2		2		1			3
Varix		1		1					1
DISEASES OF THE RESPIRATORY SYSTEM	1	61	32	16	1	10	3	354	416
Laryngitis, chronic								1	1
Bronchitis:									
Acute	1	22	16	4	1	1	1	295	318
Chronic		4		4				33	37
Catarrhal		3	2	1				4	7
Spasmodic asthma		5	1	3			1	8	13
Hæmorrhage of lung								1	1
Œdema of lung		1		1					1
Pneumonia		17	7	1		9		2	19
Pneumonic phthisis, chronic								3	3
Pleurisy:									
Acute		7	6	1				4	11
Chronic		2		1			1	3	5
DISEASES OF THE DIGESTIVE SYSTEM	6	87	66	22		3	2	620	713
Ulcer of the lips		1		1				1	2
Stomatitis								7	7
Ulcerative stomatis								1	1
Cyst of the mouth		1	1					1	2
Caries of dentine and cementum								15	15
Necrosis of dentine and cementum								3	3
Inflammation of dental periosteum								2	2
Abscess of dental periosteum								1	1
Ulceration of gums and alveoli		1		1					1
Toothache								22	22
Sore throat		4	3	1				28	32
Quinsy		1	1					2	3
Follicular tonsilitis		3	2	1				3	6
Abscess of salivary glands								2	2
Salivation								1	1
Follicular inflammation of the pharynx								11	11
Inflammation of the stomach		3		1		2		12	15
Ulceration of the stomach		1	1						1
Dyspepsia	1	3	3	1				76	80
Vomiting								1	1
Inflammation of the intestines:									
Catarrhal		3	3					3	6
Ulcerative								2	2
Abscess in the subperitoneal tissue		1	1						1
Obstruction of the intestines		1	1						1
Hernia		5	1	4				93	98
Diarrhœa	1	31	28	2			2	105	137
Constipation		4	3	1				156	160
Colic		2	2					30	32
Abscess of the rectum		1	1						1
Piles:									
Internal		1		1				10	11
External	1	4	3	2				8	13
Prolapsus of the rectum	1			1					1
Fistula in ano	2	1	1	2				2	5
Pruritus ani								3	3
Hypertrophy of the liver								3	3
Congestion of the liver		5	5					1	6
Hepatitis		2		2				4	6
Cirrhosis of liver		1				1		1	2
Jaundice		7	6	1				6	13
Inflammation of hepatic ducts and gall-bladder								2	2
Gallstones								1	1
Adhesion of peritoneum								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE GULF—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE LYMPHATIC SYSTEM	1	43	21	18			5	64	108
Induration and enlargement of spleen from ague								1	1
Congestion of the spleen		1	1					1	2
Hypertrophy of lymph-glands								1	1
Inflammation of lymph-vessels								1	1
Inflammation of lymph-glands		27	16	7			4	48	75
Suppuration of lymph-glands	1	15	4	11			1	12	28
DISEASES OF THE URINARY SYSTEM		7	3	3			1	50	57
Bright's disease		3		2			1	12	15
Nephralgia		1	1						1
Hæmaturia								2	2
Lithuria								1	1
Inflammation of bladder:									
Acute								1	1
Subacute		1	1					2	3
Chronic		1		1				13	14
Irritability of bladder		1	1					19	20
DISEASES OF THE GENERATIVE SYSTEM	10	98	59	36	3		10	269	377
Urethritis		1	1					6	7
Gleet								3	3
Ulcer of the urethra		1	1						1
Stricture of urethra, organic	1	12	3	8			2	25	38
Urinary fistula		2	1		1			3	5
Hypertrophy of prostate gland								1	1
Chronic inflammation of prostate gland								1	1
Inflammation of the penis		1		1				1	2
Inflammation of glans penis								2	2
Abscess of penis		1	1					1	1
Ulcer of penis	7	55	34	20	2		6	178	240
Phimosis		1	1					2	3
Paraphimosis		1	1					2	3
Inflammation of the scrotum	1		1						1
Abscess of scrotum								1	1
Varicocele								5	5
Inflammation of tunica vaginalis		1		1				1	2
Orchitis:									
Acute		10	8	1			1	10	20
Chronic		3	1	2				10	13
Epididymitis	1	8	6	2			1	10	19
Spermatorrhœa		1		1				3	4
Impotence								3	3
Inflammation of the vagina								1	1
DISEASES OF THE ORGANS OF LOCOMOTION		5	1	2	1		1	6	11
Ostitis		1		1					1
Necrosis		1			1			2	3
Synovitis:									
Acute		2	1	1				1	3
Chronic								1	1
Caries and necrosis of spine		1					1		1
Inflamed bursa								2	2
DISEASES OF THE CONNECTIVE TISSUE	1	34	22	11			2	53	88
Œdema		1		1					1
Inflammation	1	7	7	1				7	15
Abscess		26	15	9			2	46	72
DISEASES OF THE SKIN	2	61	38	23		1	1	162	225
Erythema		1		1				2	3
Urticaria		1	1					6	7
Eczema		7	2	5				26	33
Intertrigo								4	4
Ecthyma		1	1						1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE GULF—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE SKIN—Continued.									
Lichen								2	2
Miliaria								1	1
Herpes		4	3	1				1	5
Zona		2	2					2	4
Acne								3	3
Chilblain								7	7
Frostbite		2	1	1					2
Ulcer	1	21	14	8				45	67
Boil		6	4	2				28	34
Carbuncle		6	3	2		1		8	14
Whitlow		7	5	1			1	15	22
Onychia		1		1					1
Corn								1	1
Lupus	1	1	1	1					2
Cheloid								1	1
Wen								5	5
Pruritus		1	1					5	6
PARASITIC DISEASES OF THE SKIN		4	1	2	1			19	23
Ringworm								9	9
Phthiriasis		1	1					8	9
Irritation by stinging plants								2	2
Unclassified		3		2	1				3
Poisons		**4**	**2**	**2**				**1**	**5**
Metals and their salts		1		1					1
Vegetable poisons		3	2	1				1	4
Injuries	**8**	**182**	**137**	**38**	**1**	**2**	**12**	**353**	**548**
GENERAL INJURIES		8	6	1		1		20	28
Burns and scalds		6	4	1		1		20	26
Heat-stroke		2	2						2
LOCAL INJURIES	8	174	131	37	1	1	12	333	515
Strain of muscles		5	4				1	16	21
Abrasion of skin		1	1					2	3
Foreign body in subcutaneous tissue								1	1
Contusion of scalp								1	1
Scalp wound:									
Bone not exposed		2	2					14	16
Bone exposed		3	3					3	6
Fracture of the base of the skull		1	1					1	2
Contusion of face		3	1	2				3	6
Wound of face and mouth		8	5	2			1	6	14
Contusion of the eye								1	1
Foreign body in cornea or conjunctiva								4	4
Wound of conjunctiva		1		1					1
Wound of the sclerotic		1	1						1
Contusion of pinna								2	2
Rupture of membrana tympani								1	1
Contusion of soft parts of neck		3		3				1	4
Wound of neck		2	1			1			2
Contusion of the chest	1	3	3	1				20	24
Fracture of the ribs	1	3	2	1			1		4
Wound of parietes of chest		3	1	2					3
Contusion of back		10	10					16	26
Sprain of back		4	4					20	24
Wound of back		2	1	1				1	3
Concussion of cord		1	1						1
Contusion of abdomen		1	1						1
Wound of parietes of abdomen		1	1						1
Wound of the urethra, perineum, scrotum, and penis		1	1					2	3
Rupture of urethra		1	1						1

Table VII.—Tabular Statement, by Districts, of Diseases and Injuries Treated during the Year ended June 30, 1894—Continued.

THE GULF—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Injuries—Continued.									
LOCAL INJURIES—Continued.									
Fracture and dislocation of pelvis		1	1						1
Contusion of upper extremities		16	13	3				42	58
Sprain of the shoulder		1	1					3	4
Sprain of the elbow								3	3
Sprain of the wrist		2	1	1				9	11
Sprain of the fingers								2	2
Wound of the upper extremities		27	19	7			1	57	84
Fracture of the clavicle		2	1				1		2
Fracture of the humerus	1	3	2				2	1	5
Fracture of the radius		2		2				1	3
Fracture of both bones of forearm	1		1						1
Dislocation of the clavicle								1	1
Dislocation of the humerus								1	1
Dislocation of the metacarpus								1	1
Dislocation of the phalanges of fingers								1	1
Contusion of the lower extremities	1	25	19	4			3	52	78
Sprain of the hip								1	1
Sprain of the knee		2	2					9	11
Sprain of the ankle	1	9	8	2				5	15
Wound of the lower extremities	1	13	9	4	1			26	40
Fracture of femur		5	3	1			1	1	6
Fracture of patella	1		1						1
Fracture of leg, both bones		3	2				1		3
Fracture of tibia alone		1	1						1
Fracture of fibula alone		2	2						2
Fracture of phalanges of toes								1	1
Dislocation of the patella								1	1

THE OHIO.

Diseases.	Remaining under treatment from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
TOTAL CASES	**80**	**1,075**	**673**	**371**	**32**	**29**	**50**	**3,421**	**4,576**
General Diseases	**34**	**511**	**303**	**192**	**15**	**14**	**21**	**1,572**	**2,117**
Cowpox								8	8
Measles		3	3						3
Influenza		36	32	4				126	162
Mumps	1	1	2						2
Simple continued fever		1	1						1
Enteric fever	1	14	9	1		2	3	2	17
Typho-malarial fever		2	2						2
Sporadic cholera								3	3
Dysentery	1	24	21	2			2	12	37
Malarial intermittent fever	4	98	96	6				284	386
Malarial remittent fever	1	12	10	1	1		1	9	22
Malarial cachexia		2	1	1				31	33
Erysipelas, simple		3	3						3
Syphilis:									
Primary		19	8	9	1		1	53	72
Secondary	8	95	2	95	2		4	283	386
Gonorrhœa		33	18	12	2		1	367	400
Animal parasites								2	2
Scurvy								2	2
Alcoholism		13	10		2		1	14	27
Delirium tremens		1	1						1
Debility		4		3			1	54	58
Old age	1						1		1
Rheumatic fever		20	18	2				2	22
Rheumatism	9	92	64	31	1	1	4	237	338
Osteo-arthritis		2		2				1	3
Nonmalignant new growth		4	2	2				12	16
Tubercle	7	31		19	6	11	2	62	100
Scrofula	1	1		2				3	5
Purpura								1	1
Anæmia								4	4

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE OHIO—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.				Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.	Died.			
Local Diseases	**33**	**450**	**285**	**145**	**16**	**15**	**22**	**1,642**	**2,125**
DISEASES OF THE NERVOUS SYSTEM	4	17	7	5	4	2	3	114	135
Inflammation of cerebral membranes		1				1			1
Neuritis								3	3
Locomotor ataxy	3	3		2	2		2	12	18
Hemiplegia	1	1			1	1		2	4
Paraplegia		1			1				1
Local paralysis		1		1				1	2
Wry-neck								1	1
Hyperæsthesia								2	2
Neuralgia		3	3					51	54
Facial								13	13
Sciatica		4	4					9	13
Vertigo								6	6
Megrim		1		1				13	14
Epilepsy		2		1			1		2
Hysteria								1	1
MENTAL DISEASE								1	1
Hypochondriasis								1	1
DISEASES OF THE EYE	2	10	7	3	1		1	41	53
Ecchymosis of the conjunctiva								1	1
Conjunctivitis	1	7	5	2	1			21	29
Ulcer of cornea								3	3
Iritis	1	2	1	1			1		3
Retinitis								5	5
Cataract								1	1
Ametropia								2	2
Amblyopia								1	1
Amaurosis								1	1
Squint								1	1
Blepharitis								3	3
Stye								1	1
Abscess of eyelid		1	1					1	2
DISEASES OF THE EAR		2		2				21	23
Abscess of the external meatus								2	2
Sebaceous cyst								1	1
Accumulation of wax								1	1
Inflammation of the middle ear		2		2				16	18
Obstruction of Eustachian tube								1	1
DISEASES OF THE NOSE		1		1				41	42
Hypertrophy								2	2
Inflammation		1		1				2	3
Nasal catarrh								35	35
Ulceration								1	1
Perforation of septum								1	1
DISEASES OF THE CIRCULATORY SYSTEM	3	12	1	8	1	4	1	30	45
Endocarditis								1	1
Valvular disease:									
Aortic		1		1				1	2
Mitral	2	8		5	1	3	1	11	21
Hypertrophy of heart		1		1					1
Dilatation of heart								1	1
Palpitation and irregular action of heart		1	1					6	7
Aneurism of arteries	1	1		1		1		7	9
Phlebitis								1	1
Varix								2	2

Table VII.—Tabular Statement, by Districts, of Diseases and Injuries Treated during the Year ended June 30, 1894—Continued.

THE OHIO—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
Diseases of the Respiratory System	2	101	64	26	1	7	5	220	323
Hay asthma								3	3
Laryngitis:									
Acute	1	2	1	2				9	12
Chronic								3	3
Bronchitis:									
Acute	1	29	23	7				142	172
Chronic		14	7	5	1		1	39	53
Catarrhal		5	3	2				3	8
Spasmodic asthma		9	3	5			1	9	18
Pneumonia		33	22	4		6	1	1	34
Gangrene of lung		1				1			1
Pneumonic phthisis:									
Acute								2	2
Chronic								1	1
Emphysema		1					1		1
Pleurisy:									
Acute		6	5				1	7	13
Chronic		1		1				1	2
Diseases of the Digestive System	1	113	78	31	3	1	3	605	721
Ulcer of the lips								3	3
Stomatitis								1	1
Caries of dentine and cementum								4	4
Inflammation of dental periosteum								1	1
Abscess of dental periosteum		1	1					3	4
Inflammation of gums and alveoli								2	2
Toothache								1	1
Inflammation of the tongue								1	1
Ulcer of the tongue								2	2
Sore throat		1	1					10	11
Quinsy		2		2				2	4
Follicular tonsilitis		14	11	3				33	47
Ulceration of fauces		1		1					1
Follicular inflammation of pharynx		1		1				57	58
Inflammation of the stomach		13	8	5				24	37
Ulceration of the stomach		1		1					1
Dyspepsia								79	79
Gastrodynia								1	1
Vomiting								1	1
Inflammation of the intestines:									
Catarrhal		19	13	6				27	46
Ulcerative		3	3					3	6
Hernia	1	5	3	2	1			63	69
Diarrhœa	1	22	20	2			1	93	116
Constipation		2	2					99	101
Colic		1	1					3	4
Abscess of the rectum		1	1					1	2
Piles:									
Internal		6	4	1			1	15	21
External		2	2					17	19
Fistula in ano		8	3	3	1		1	1	9
Pruritus ani								3	3
Congestion of the liver		2	2					22	24
Hepatitis		2	1	1				30	32
Cirrhosis of liver	1	2		1	1	1		1	4
Jaundice		1	1					2	3
Inflammation of hepatic ducts and gall-bladder		2	1	1					2
Peritonitis		1		1					1
Diseases of the Lymphatic System	6	32	26	8	3		1	39	77
Inflammation of lymph-glands	5	19	15	6	2		1	27	51
Suppuration of lymph-glands	1	13	11	2	1			12	26

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE OHIO—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
Diseases of the Urinary System	1	20	7	12	1	1		70	91
Acute nephritis		4		3	1			7	11
Bright's disease	1	8		8		1		15	24
Calculus in ureter		1	1						1
Diabetes insipidus								1	1
Suppression of urine								2	2
Hæmaturia								2	2
Lithuria								6	6
Inflammation of bladder:									
Acute		6	5	1				14	20
Subacute								11	11
Chronic								3	3
Irritability of bladder								5	5
Retention of urine		1	1					1	2
Incontinence of urine								3	3
Diseases of the Generative System	7	90	64	27	2		4	234	331
Urethritis								13	13
Gleet								3	3
Stricture of urethra, organic		17	8	8			1	40	57
Urinary fistula	1	1		2					2
Hypertrophy of prostate gland								10	10
Atrophy of prostate gland								1	1
Inflammation of glans penis		1		1				4	5
Ulcer of penis	2	41	31	9	1		2	107	150
Phimosis	1	6	6	1				4	11
Paraphimosis		1	1					2	3
Abscess of the scrotum		1	1					1	2
Varicocele		1		1				9	10
Hydrocele of tunica vaginalis		2	1		1			5	7
Orchitis:									
Acute	2	10	9	2			1	16	28
Chronic		1	1					3	4
Epididymitis	1	8	6	3				3	12
Impotence								1	1
Inflammation of the uterus								2	2
Inflammation of the vagina								3	3
Inflammation of the vulva								1	1
Ulcer of vulva								2	2
Dysmenorrhœa								1	1
Leucorrhœa								3	3
Diseases of the Organs of Locomotion		13	2	9			2	14	27
Periostitis		1	1					1	2
Necrosis		6		5			1	2	8
Dropsy of joints		1		1					1
Synovitis:									
Acute		1					1	2	3
Chronic		1		1				1	2
Ankylosis		1		1					1
Lateral curvature of spine								2	2
Abscess of muscles		1		1				1	2
Inflammation of tendons								1	1
Bunion		1	1					4	5
Diseases of the Connective Tissue		17	15	1			1	7	24
Œdema		2	1				1	1	3
Inflammation		1	1						1
Abscess		14	13	1				6	20
Diseases of the Skin	5	22	14	12			1	190	217
Erythema								7	7
Urticaria								11	11
Eczema		3	1	2				60	63
Pityriasis								3	3
Lichen								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE OHIO—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE SKIN—Continued.									
Psoriasis								2	2
Herpes		1	1					12	13
Zona								2	2
Acne								2	2
Sycosis								1	1
Alopecia								1	1
Frostbite		4	3	1				1	5
Ulcer	3	9	5	6			1	42	54
Fissures								1	1
Boil								26	26
Carbuncle		2	1	1				7	9
Gangrene	1			1					1
Whitlow		2	2					3	5
Onychia		1		1				6	7
Wen	1		1						1
Pruritus								2	2
PARASITIC DISEASES OF THE SKIN								15	15
Ringworm								3	3
Itch								4	4
Phthiriasis								8	8
Poisons								**1**	**1**
Vegetable poisons								1	1
Injuries	**13**	**114**	**85**	**34**	**1**		**7**	**206**	**333**
GENERAL INJURIES	2	3	4	1				8	13
Burns and scalds	2	1	2	1				8	11
Heat-stroke		2	2						2
LOCAL INJURIES	11	111	81	33	1		7	198	320
Contusion of nerves								1	1
Bruise of muscles		1		1				1	2
Strain of muscles								1	1
Rupture of tendons								1	1
Foreign body in subcutaneous tissue								1	1
Scalp wound:									
Bone not exposed		2	2					12	14
Bone exposed		1	1						1
Contusion of face		1	1					2	3
Wound of face and mouth		2	2					5	7
Fracture of facial bones		1					1		1
Foreign body in cornea or conjunctiva								7	7
Wound of eyelid		1	1					1	2
Foreign body in external meatus								1	1
Wound of neck								1	1
Contusion of the chest		3	2		1			3	6
Fracture of the ribs		3	1	2				5	8
Penetrating wound of pleura or lung		1	1					1	2
Contusion of back	1	1	1	1				4	6
Sprain of back		6	6					18	24
Wound of back		1		1				1	2
Contusion of upper extremities		4	2	2				11	15
Sprain of the shoulder								6	6
Sprain of the elbow								4	4
Sprain of the wrist		1	1					2	3
Sprain of the fingers								4	4
Wound of the upper extremities	1	15	14	2				2	18
Wound of joint, upper extremities								37	37
Fracture of the clavicle		1	1						1
Fracture of the scapula		1		1					1
Fracture of the humerus		1		1				2	3
Fracture of the radius		1		1					1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE OHIO—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Injuries—Continued.									
LOCAL INJURIES—Continued.									
Fracture of the ulna		1	1						1
Fracture of both bones of forearm								3	3
Fracture of carpus, metacarpus, and phalanges								2	2
Dislocation of the humerus		1	1					1	2
Dislocation of phalanges of thumb								1	1
Contusion of the lower extremities	1	22	16	6			1	15	38
Sprain of the knee		4	2	2				5	9
Sprain of the ankle	1	12	10	2			1	13	26
Wound of the lower extremities	4	16	12	7			1	22	42
Fracture of femur		2		1			1		2
Fracture of cervix femoris	2		1				1		2
Fracture of leg, both bones		2	2					1	3
Fracture of tibia alone		2		1			1		2
Fracture of fibula alone		1	1						1
Dislocation of the knee	1			1					1
Dislocation of the metatarsus and phalanges								1	1

THE MISSISSIPPI.

Diseases.	Remaining under treatment from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
TOTAL CASES	**56**	**1,272**	**830**	**341**	**33**	**53**	**71**	**2,982**	**4,310**
General Diseases	**28**	**604**	**399**	**178**	**11**	**23**	**21**	**1,441**	**2,073**
Measles		4	4						4
Influenza		26	20	4	1	1		67	93
Mumps		2	2					1	3
Enteric fever	2	3	5						5
Typho-malarial fever		2	1			1			2
Dysentery		18	12	5		1		28	46
Malarial intermittent fever	4	203	187	10	2	3	5	311	518
Malarial remittent fever	2	40	34	5		3		51	93
Malarial cachexia		17	12	5				64	81
Erysipelas, simple		5	5						5
Syphilis:									
Primary		11	1	10				21	32
Secondary	6	89	9	80	2		4	265	360
Gonorrhœa	3	28	19	11	1			268	299
Animal parasites								6	6
Alcoholism		27	18	5	1	2	1	11	38
Debility		7	2	4			1	23	30
Rheumatic fever		9	5	2			2		9
Rheumatism	3	81	59	19	1	1	4	286	370
Nonmalignant new growth		7	3	4				4	11
Malignant new growth		1				1			1
Tubercle	8	22	1	12	3	10	4	28	58
Scrofula		1		1				2	3
Anæmia		1		1				5	6
Local Diseases	**19**	**514**	**309**	**137**	**17**	**28**	**42**	**1,290**	**1,823**
DISEASES OF THE NERVOUS SYSTEM	2	13	3	3		4	5	55	70
Hæmorrhage, cerebral		1				1			1
Spinal meningitis		2				1	1		2
Myelitis		1					1	2	3
Softening of brain or cord		1				1			1
Sclerosis								1	1
Spastic spinal paralysis								2	2
Locomotor ataxy		1					1		1
Hemiplegia		2		2				1	3
Local paralysis	1		1					2	3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE MISSISSIPPI—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE NERVOUS SYSTEM—Continued.									
Spasm of muscle								1	1
Wry-neck								3	3
Paralysis agitans		1					1	1	2
Neuralgia		1					1	22	23
Facial		2	2					16	18
Sciatica								2	2
Epilepsy	1	1		1		1		2	4
MENTAL DISEASES		1		1					1
Mania		1		1					1
DISEASES OF THE EYE		12	8	4				23	35
Conjunctivitis		6	6					12	18
Pterygium		1	1					2	3
Iritis		1	1					3	4
Panophthalmitis		1		1					1
Cataract								2	2
Amblyopia		2		2					2
Amaurosis								1	1
Hæmatoma								1	1
Abscess of eyelid								2	2
Ectropian		1		1					1
DISEASES OF THE EAR		4	2	2				13	17
Accumulation of wax								4	4
Inflammation of the middle ear		4	2	2				8	12
Obstruction of Eustachian tube								1	1
DISEASES OF THE NOSE								13	13
Inflammation								1	1
Nasal catarrh								12	12
DISEASES OF THE CIRCULATORY SYSTEM	3	16	1	15		2	1	25	44
Pericarditis		1				1			1
Endocarditis		1		1					1
Valvular disease:									
Aortic		4		3			1	3	7
Mitral	3	8		10		1		21	32
Angina pectoris								1	1
Phlebitis		1	1						1
Varix		1		1					1
DISEASES OF THE RESPIRATORY SYSTEM	2	79	42	21	4	11	3	203	284
Laryngitis:									
Acute								2	2
Catarrhal								1	1
Bronchitis:									
Acute		34	22	8	1		3	146	180
Chronic		7	3	4				16	23
Catarrhal		2	1	1				11	13
Spasmodic asthma	1	4	2	3				18	23
Hæmorrhage of lung								1	1
Pneumonia		19	11	1		7		3	22
Abscess of lung		1				1			1
Cirrhosis of lung		1		1					1
Pneumonic phthisis, chronic		2			1	1			2
Emphysema		4	1	2	1				4
Pleurisy:									
Acute		5	2	1	1	1		3	8
Chronic	1					1		2	3
DISEASES OF THE DIGESTIVE SYSTEM	3	157	116	18	6	5	15	572	732
Stomatitis								3	3
Caries of dentine and cementum								16	16

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE MISSISSIPPI—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE DIGESTIVE SYSTEM—Continued.									
Abscess of dental periosteum		1	1					2	3
Inflammation of gums and alveoli								2	2
Ulceration of gums and alveoli		1	1						1
Toothache								2	2
Ulcer of the tongue								3	3
Elongated uvula								2	2
Sore throat								13	13
Quinsy								2	2
Follicular tonsilitis		7	5	1			1	15	22
Ulceration of fauces								1	1
Inflammation of salivary glands		1	1					1	2
Salivation								1	1
Follicular inflammation of the pharynx		2	2					11	13
Ulceration of pharynx								1	1
Inflammation of the stomach		7	3	1		1	2	24	31
Dyspepsia								74	74
Vomiting		1	1						1
Hæmorrhage of the intestines								1	1
Inflammation of the intestines:									
Catarrhal	1	52	45	3	1	2	2	86	139
Ulcerative		8	5	1		1	1	10	18
Hernia		5	3		1		1	64	69
Diarrhœa	1	32	25	5	1		2	91	124
Constipation								120	120
Colic		2	2					3	5
Abscess of the rectum		1	1						1
Abscess of the anus		2	2					1	3
Ulceration of the rectum		3	3						3
Piles:									
Internal	1	4	2		1		2	3	8
External		9	5	2	1		1	10	19
Fistula in ano		4	3		1			1	5
Fissure of the anus								1	1
Atrophy of the liver		1				1			1
Congestion of the liver		2	2					3	5
Hepatitis		2	1	1					2
Cirrhosis of liver		3		2			1		3
Jaundice		1					1	1	2
Inflammation of hepatic ducts and gall bladder		4	3				1	2	6
Gallstones								1	1
Biliary colic		1		1				1	2
Ascites		1		1					1
DISEASES OF THE LYMPHATIC SYSTEM	2	25	17	7	1		2	19	46
Induration and enlargement of spleen from ague								1	1
Abscess of the spleen		1	1						1
Inflammation of lymph-glands		5	3	1			1	9	14
Suppuration of lymph-glands	2	19	13	6	1		1	9	3
DISEASES OF THE URINARY SYSTEM	2	20	4	11		5	2	39	6
Acute nephritis		1		1				2	
Bright's disease	1	13		8		4	2	5	1
Diabetes insipidus		1				1			
Hæmaturia		1		1					
Inflammation of bladder:									
Acute	1	4	4	1				10	1
Chronic								8	
Irritability of bladder								9	
Incontinence of urine								5	
DISEASES OF THE GENERATIVE SYSTEM	2	94	53	34	3		6	211	30
Urethritis								1	
Gleet								1	

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREAED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE MISSISSIPPI—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE GENERATIVE SYSTEM—Continued.									
Ulcer of the urethra								1	1
Stricture of urethra, organic	1	24	8	16	1			16	41
Hypertrophy of prostate gland								1	1
Inflammation of glans penis								1	1
Ulcer of penis	1	51	34	14	1		3	165	217
Gangrene of penis		1	1						1
Phimosis		5	3		1		1	2	7
Paraphimosis		1	1						1
Chordee								1	1
Abscess of the scrotum		1	1					1	2
Inflammation of spermatic cord								1	2
Varicocele		1		1					
Hæmatocele of tunica vaginalis								2	2
Orchitis, acute		3	1	2				9	12
Epididymitis		7	4	1			2	5	12
Spermatorrhœa								1	1
Impotence								2	2
Menorrhagia								1	1
DISEASES OF THE ORGANS OF LOCOMOTION		13	2	8	1		2	5	18
Ostitis		1		1				2	3
Periostitis		2		2					2
Caries		1					1		1
Necrosis		1		1					1
Synovitis, acute		3	2				1	1	5
Loose body in joint		4		3	1			1	4
Angular curvature of spine		1		1					1
Bursal tumor								1	1
DISEASES OF THE CONNECTIVE TISSUE		16	9	3	2	1	1	30	46
Œdema								3	3
Inflammation		4	2	2				7	11
Abscess		12	7	1	2	1	1	20	32
DISEASES OF THE SKIN	3	62	50	10			5	75	140
Erythema		1					1	1	2
Urticaria								2	2
Eczema		3	1	1			1	18	21
Impetigo		1					1		1
Psoriasis								1	1
Herpes								2	2
Zona		1		1					1
Pemphigus								1	1
Acne								1	1
Frostbite		26	24	2				9	35
Ulcer	3	21	17	5			2	19	43
Boil		3	3					4	7
Carbuncle		1	1					2	3
Gangrene		1	1						1
Whitlow		1	1					5	[illegible]
Onychia		1	1					2	3
Corn								1	1
Lupus		2	1	1				1	3
Wen								2	2
Pruritus								4	4
PARASITIC DISEASES OF THE SKIN		2	2					7	9
Ringworm								1	1
Itch		1	1					4	5
Phthiriasis								2	2
Unclassified		1	1						1
Poisons		**1**	**1**					**3**	**4**
Metals and their salts								2	2
Vegetable poisons		1	1					1	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE MISSISSIPPI—Continued.

Diseases.	Number of cases.							
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Injuries	**9**	**153**	**121**	**26**	**5**	**2**	**8**	**248**	**410**
GENERAL INJURIES	......	8	8	......	......	....	......	14	22
Burns and scalds	......	6	6	......	......	....	......	12	18
Effects of cold	......	......	......	......	......	....	......	2	2
Heat-stroke	......	1	1	......	......	....	......	......	1
Multiple injury	......	1	1	......	......	....	......	......	1
LOCAL INJURIES	9	145	113	26	5	2	8	234	388
Strain of muscles	......	1	1	......	......	....	......	10	11
Strain of tendons	......	......	......	......	......	....	......	1	1
Abrasion of skin	......	1	1	......	......	....	......	1	2
Foreign body in subcutaneous tissue	......	......	......	......	......	....	......	1	1
Contusion of scalp	......	2	2	......	......	....	......	......	2
Scalp wound:									
Bone not exposed	......	7	6	......	1	....	......	6	13
Bone exposed	1	1	1	1	......	....	......	2	4
Contusion of skull	......	1	1	......	......	....	......	......	1
Fracture of the vault of the skull	1	4	4	......	......	1	......	......	5
Compression of brain	......	1	......	......	......	1	......	......	1
Contusion of face	......	......	......	......	......	....	......	2	2
Wound of face and mouth	1	6	4	1	2	....	......	4	11
Fracture of facial bones	......	2	2	......	......	....	......	2	4
Contusion of the eye	......	1	1	......	......	....	......	2	3
Foreign body in cornea or conjunctiva	......	......	......	......	......	....	......	4	4
Wound of eyelid		1	1	......	......	....	......	......	1
Contusion of soft parts of neck	......	1	1	......	......	....	......	......	1
Wound of neck	......	......	......	......	......	....	......	2	2
Contusion of the chest	......	2	2	......	......	....	......	7	9
Fracture of the rib	......	2	1	1	......	....	......	2	4
Wound of parietes of chest	......	2	1	1	......	....	......	1	3
Perforating wound of chest	......	1	......	1	......	....	......	......	1
Penetrating wound of pleura or lung	......	1	1	......	......	....	......	......	1
Contusion of back	......	6	5	1	......	....	......	5	11
Sprain of back	......	6	5	1	......	....	......	31	37
Wound of back	......	2	2	......	......	....	......	......	2
Contusion of abdomen	......	1	1	......	......	....	......	......	1
Wound of parietes of abdomen	......	4	2	2	......	....	......	......	4
Contusion of testicle	......	4	2	2	......	....	......	1	5
Contusion of upper extremities	......	10	10	......	......	....	......	33	43
Sprain of the shoulder	......	......	......	......	......	....	......	2	2
Sprain of the elbow	......	......	......	......	......	....	......	1	1
Sprain of the wrist	......	2	2	......	......	....	......	6	8
Sprain of the fingers	......	......	......	......	......	....	......	3	61
Wound of the upper extremities	......	15	11	4	......	....	......	46	2
Fracture of the humerus	......	1	......	1	......	....	......	1	1
Fracture of both bones of forearm	......	1	1	......	......	....	......	......	42
Fracture of carpus, metacarpus, and phalanges	......	......	......	......	......	....	......	1	1
Dislocation of the humerus	......	1	1	......	......	....	......	......	1
Contusion of the lower extremities	2	15	15	1	......	....	1	25	42
Sprain of the hip	......	......	......	......	......	....	......	1	1
Sprain of the knee	......	3	......	......	......	....	......	8	11
Sprain of the ankle	......	9	7	1	1	....	......	4	13
Sprain of the foot	......	......	......	......	......	....	......	1	1
Wound of the lower extremities	......	16	9	5	......	....	2	14	30
Fracture of cervix femoris	......	1	......	1	......	....	......	......	1
Fracture of patella	......	1	......	1	......	....	......	3	4
Fracture of leg, both bones	......	4	1	1	......	....	2	......	4
Fracture of tibia alone	2	1	1	......	......	....	2	......	3
Fracture of fibula alone	1	2	2	......	1	....	......	......	3
Fracture of tarsus	......	1	1	......	......	....	......	......	1
Fracture of metatarsus	1	1	1	......	......	....	1	......	2
Dislocation of the knee	......	1	1	......	......	....	......	1	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE GREAT LAKES.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
TOTAL CASES	156	2,326	1,508	645	87	67	175	9,069	11,551
General Diseases	74	989	615	304	43	35	66	4,354	5,417
Smallpox		2	1			1			2
Cowpox		11	5	6				649	660
Measles		3	3					2	5
Influenza	4	90	88	5		1		232	326
Mumps								2	2
Simple continued fever	2	17	15		4			9	28
Enteric fever	9	107	59	38	6	8	5	9	125
Sporadic cholera		1						2	3
Epidemic diarrhœa		1		1				23	24
Dysentery	1	3	4					12	16
Malarial intermittent fever	4	82	71	5	1	2	7	150	236
Malarial remittent fever	1	21	19			2	1		22
Malarial cachexia		1		1				7	8
Phagedæna		1					1	4	5
Erysipelas:									
Simple		11	9	1		1		10	21
Phlegmonous		1				1			1
Syphilis:									
Primary	1	31	6	23	2		1	140	172
Secondary	11	108	21	85	6		6	860	979
Gonorrhœa	8	75	49	26	1	1	7	1,047	1,130
Animal parasites		4	3	1				23	27
Alcoholism	4	49	40	3		2	8	50	103
Delirium tremens		8	5	1	1		1		8
Debility		16	6	9	1			130	146
Rheumatic fever	3	48	42	6	2		1	10	61
Rheumatism	8	237	157	62	3	1	8	841	1.072
Osteo-arthritis	1						1		1
Nonmalignant new growth		9	5	2	1	1		35	44
Malignant new growth	1	2	1		1	1			3
Tubercle	16	62	4	28	14	13	19	99	177
Purpura		1	1						1
Anæmia								6	6
Diabetes mellitus		1		1				2	3
Local Diseases	51	900	558	256	37	26	74	4,083	5,034
DISEASES OF THE NERVOUS SYSTEM	11	56	28	15	10	3	11	188	255
Congestion of brain		1		1				3	4
Anæmia								1	1
Inflammation of cerebral membranes	1	2	3					1	4
Myelitis		1			1			1	2
Neuritis		5	5					8	13
Abscess of the brain		1				1			1
Sclerosis		1					1		1
Locomotor ataxy	6	5		4	1	1	5	4	15
Apoplexy		1			1				1
Paralysis		1			1				1
Hemiplegia	3	1	1	1	1		1		4
Paraplegia								6	6
Local paralysis		6		3	1		2	7	13
Anæsthesia								1	1
Spasm of muscle								5	5
Wryneck		1		1				2	3
Paralysis agitans	1	1			1		1		2
Neuralgia		10	8	2				89	99
Facial		1	1					16	17
Sciatica		10	8	2				11	21
Vertigo		1	1					5	6
Megrim		1	1					11	12
Epilepsy		5		1	3		1	16	21
Chorea		1				1			1
Somnambulism								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE GREAT LAKES—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
MENTAL DISEASES		4	1	1	1		1	3	7
Hypochondriasis		2	1				1	1	3
Insanity								2	2
Melancholia		1			1				1
Dementia		1		1					1
DISEASES OF THE EYE	2	32	16	11	2		5	99	133
Œdema of the conjunctiva								1	1
Conjunctivitis		16	8	5			3	79	95
Keratitis	1	2	1	2				2	5
Ulcer of cornea		3	2	1				3	6
Opacity of cornea		1		1					1
Iritis		4	1	1	1		1	6	10
Atrophy of optic disc or papilla		1					1		1
Cataract	1	2	2		1			1	4
Ametropia								2	2
Abscess of lachrymal gland		1		1					1
Stricture of nasal duct								1	1
Hæmatoma								1	1
Blepharitis		1	1						1
Stye								2	2
Chalazion								1	1
Abscess		1	1						1
DISEASES OF THE EAR	1	16	10	7				61	78
Inflammation of the external meatus, acute		2	2					14	16
Accumulation of wax								24	24
Inflammation of the middle ear	1	14	8	7				21	36
Perforation of membrana tympani								2	2
DISEASES OF THE NOSE		2	1		1			64	66
Epistaxis		1	1						1
Inflammation								1	1
Nasal catarrh		1			1			63	64
DISEASES OF THE CIRCULATORY SYSTEM	5	32	4	20	4	7	2	72	109
Hydropericardium		1		1					1
Pericarditis		1		1					1
Valvular disease:									
Aortic	1	2		3					3
Mitral	1	19	1	10	1	7	1	27	47
Hypertrophy of heart		2			2			2	4
Inflammation of heart								1	1
Degeneration of heart, fatty		1		1					1
Dilatation of heart								8	8
Angina pectoris		1		1				1	2
Palpitation and irregular action of heart		1	1					17	18
Degeneration of arteries	2	1		2			1	2	5
Dilatation of arteries								1	1
Aneurism of arteries	1				1				1
Obstruction of arteries		1	1						1
Phlebitis								4	4
Varix		2	1	1				9	11
DISEASES OF THE RESPIRATORY SYSTEM	7	158	97	47	3	5	13	950	1, 115
Hay asthma		1	1					1	2
Laryngitis:									
Acute		1	1					4	5
Chronic		1		1					1
Bronchitis:									
Acute	2	74	57	16	2		1	773	849
Chronic	1	20	3	13			5	103	124
Catarrhal								1	1
Dilatation of bronchi								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE GREAT LAKES—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE RESPIRATORY SYSTEM—Continued.									
Spasmodic asthma		6		5			1	22	28
Passive congestion of lung		2	1	1					2
Hæmorrhage of lung	1	1	2					3	5
Pneumonia	2	24	16	2		4	3	4	30
Pneumonic phthisis:									
Acute		4		3		1		2	6
Chronic		4	1	2	1				4
Emphysema		1		1					1
Pleurisy:									
Acute	1	12	9	1			3	26	39
Chronic		7	6	1				10	17
DISEASES OF THE DIGESTIVE SYSTEM	7	187	142	35	6	5	6	1,169	1,363
Ulcer of the lips								2	2
Stomatitis								3	3
Ulcerative stomatitis								1	1
Abscess of the antrum		1		1				1	2
Ulceration of the dental pulp								2	2
Caries of dentine and cementum								21	21
Abscess of dental periosteum		1	1					4	5
Inflammation of gums and alveoli								4	4
Ulceration of gums and alveoli								3	3
Toothache								3	3
Leucoplacia								3	3
Elongated uvula								1	1
Sore throat		3	3					37	40
Quinsy		2	1			1		10	12
Follicular tonsilitis		9	9					73	82
Sloughing sore throat		1	1						1
Inflammation of salivary glands								7	7
Abscess of salivary glands								1	1
Follicular inflammation of pharynx		3	2	1				44	47
Inflammation of the stomach		23	16	6			1	92	115
Ulceration of the stomach	1	5	1	5				5	11
Dyspepsia		10	7	2	1			230	240
Gastrodynia								4	4
Pyrosis								1	1
Inflammation of the intestines:									
Catarrhal		8	8					32	40
Ulcerative	1	9	7	1		1	1	1	11
Abscess in the subperitoneal tissue		1	1						1
Stricture of intestines		1	1						1
Hernia		13	8	3		1	1	107	120
Diarrhœa	2	35	29	5	2		1	151	188
Constipation		6	6					188	194
Colic		8	8					30	38
Hæmorrhage of the rectum		1	1					1	2
Abscess of the rectum								1	1
Ulceration of the rectum		1		1					1
Piles:									
Internal		6	5	1				20	26
External		2	1				1	53	55
Stricture of the rectum		1			1				1
Fistula in ano		9	7	1	1			3	12
Fissure of the anus								2	2
Spasm of the sphincter ani								1	1
Pruritus ani								3	3
Atrophy of the liver		1			1				1
Congestion of the liver	1	9	8	2				6	16
Hepatitis		3	1	1		1		6	9
Perihepatitis								1	1
Cirrhosis of liver		2		1		1			2
Jaundice		6	4	2				5	11
Inflammation of hepatic ducts and gall-bladder	1	1	2					1	3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDING JUNE 30, 1894—Continued.

THE GREAT LAKES—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE GENERATIVE SYSTEM—Continued.									
Gallstones		2	2					4	6
Biliary colic		1		1				1	2
Ascites		2		1			1		2
Peritonitis	1	1	2						2
DISEASES OF THE LYMPHATIC SYSTEM	3	52	37	9	1		8	112	167
Hypertrophy of lymph-glands								1	1
Inflammation of lymph-vessels		2		1			1	2	4
Inflammation of lymph-glands	1	22	16	3			4	82	105
Suppuration of lymph-glands	2	27	31	5	1		2	27	56
Lymph-fistula		1					1		1
DISEASES OF THE THYROID BODY								2	2
Goitre								2	2
DISEASES OF THE URINARY SYSTEM	1	35	12	15	1	3	5	105	141
Congestion of kidney								2	2
Acute nephritis		5	2	3				9	14
Bright's disease		12		4	1	3	4	9	21
Abscess of kidney		1		1					1
Diabetes insipidus								5	5
Suppression of urine								1	1
Hæmaturia		1					1	1	2
Lithuria								2	2
Phosphuria								1	1
Oxaluria								1	1
Hæmorrhage of bladder								1	1
Inflammation of bladder:									
Acute	1	3	3	1				23	27
Subacute		1	1					14	15
Chronic		4	3	1				14	18
Calculus of bladder		2	1	1				3	5
Irritability of bladder		3	1	2				7	10
Incontinence of urine		3	1	2				12	15
DISEASES OF THE GENERATIVE SYSTEM	2	125	79	34	5	2	7	600	727
Urethritis		1		1				14	15
Gleet		1	1					40	41
Stricture of urethra:									
Organic		31	16	11	1		3	112	143
Spasmodic		1	1						1
Urinary fistula	1	5	1	2		2	1		6
Hypertrophy of prostate gland		1		1				1	2
Œdema of the penis								1	1
Inflammation of the penis	1		1						1
Inflammation of glans penis		4	3	1				13	17
Ulcer of penis		51	33	14	1		3	300	351
Phimosis		3	3					2	5
Paraphimosis		1	1					3	4
Abscess of the scrotum								1	1
Hydrocele of spermatic cord		1	1						1
Inflammation of spermatic cord		2	2					1	3
Varicocele		2	1		1			18	20
Hydrocele of tunica vaginalis		2		1	1			3	7
Atrophy of testicles								5	3
Orchitis:									
Acute		7	5	2				29	36
Chronic								13	13
Epididymitis		5	5					16	21
Spermatorrhœa								15	15
Impotence								3	3
Inflammation, fallopian tube		1			1				1
Inflammation of the ovary		1	1						1
Hypertrophy of the uterus		1	1						1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE GREAT LAKES—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE GENERATIVE SYSTEM—Continued.									
Inflammation of the uterus		1	1					1	2
Laceration, cervix uteri		1		1					1
Inflammation of the vagina								1	1
Amenorrhœa								1	1
Monorrhagia								2	2
Leucorrhœa								3	3
Pregnancy								2	2
Abortion		2	2						2
DISEASES OF THE ORGANS OF LOCOMOTION	3	59	22	30	3		7	39	101
Ostitis		1					1		1
Periostitis		11	5	3	1		2	2	13
Caries		5	2	3				1	6
Necrosis	1	8	4	3			2	3	12
Ununited fracture, or false joint	1	1	1		1				2
Dropsy of joints		1		1				1	2
Synovitis:									
Acute	1	9	2	6	1		1	9	19
Chronic		8	2	6				2	10
Ankylosis		2		2				2	4
Loose body in joint		1		1				1	2
Psoas, lumbar, and other abscesses		1					1		1
Abscess of muscles		3	2	1				2	5
Atrophy of muscles								2	2
Inflammation of tendons								1	1
Contraction of tendons and fasciæ								1	1
Inflamed bursa		2	1	1				7	9
Bursal abscess		1	1					1	1
Thecal abscess		2		2				1	3
Bunion								2	2
Ganglion		1	1					1	2
Bursal tumor		2	1	1				1	3
DISEASES OF THE CONNECTIVE TISSUE	2	48	38	9			3	57	107
Œdema		2	1				1		2
Inflammation		7	5	1			1	17	24
Abscess	2	39	32	8			1	40	81
DISEASES OF THE SKIN	7	92	69	23		1	6	500	599
Erythema								19	19
Urticaria		1					1	18	19
Eczema	3	5	6	2				133	141
Intertrigo								2	2
Impetigo		1	1						1
Pityriasis		2	2					6	8
Prurigo								6	6
Lichen								3	3
Psoriasis		1	1					29	30
Herpes								30	30
Zona		3	3					8	11
Pemphigus		3	1			1	1	1	4
Acne								12	12
Sycosis		1	1					13	14
Steatorrhœa								2	2
Alopecia								3	3
Chilblain								1	1
Frostbite		9	8	1				5	14
Ulcer	3	46	28	17			4	99	148
Fissures								3	3
Boil		5	4	1				71	76
Carbuncle	1	5	6					7	13
Whitlow		8	6	2				18	26
Onychia								3	3
Corn								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE GREAT LAKES—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE SKIN—Continued.									
Wen		2	2					2	4
Pruritus								1	1
Hyperidrosis								3	3
Hydrosis								1	1
PARASITIC DISEASES OF THE SKIN		2	2					62	64
Ringworm								9	9
Tinea versicolor								6	6
Itch		1	1					43	44
Phthiriasis								3	3
Unclassified		1	1					1	2
Poisons		4	2	1			1	1	5
Metals and their salts		2	1				1	1	3
Vegetable poisons		2	1	1					2
POISONED WOUNDS								1	1
Venomous animals								1	1
Injuries	30	[illegible]	330	84	7	6	33	624	1,084
GENERAL INJURIES	4	36	29	7	1	1	2	34	74
Burns and scalds	3	25	20	5		1	2	25	53
Effects of cold		1	1						1
Heat-stroke		3	2	1				5	8
Multiple injury	1	5	4	1	1			3	9
Exhaustion		2	2					1	3
LOCAL INJURIES	26	394	301	77	6	5	31	590	1,010
Contusion of nerves	1		1						1
Rupture of veins		2	1			1			2
Bruise of muscles		1	1					6	7
Strain of muscles		3	2				1	19	22
Rupture of muscles		1	1					1	2
Strain of tendons		1	1						1
Abrasion of skin		1	1					3	4
Foreign body in subcutaneous tissue								2	2
Abrasion of mucous membrane								1	1
Contusion of scalp		6	6					1	7
Scalp wound:									
Bone not exposed		16	15	1				16	32
Bone exposed		3	2	1				6	9
Contusion of skull		1		1					1
Fracture of the vault of the skull		2				1	1		2
Fracture of the base of the skull		1		1					1
Concussion of brain	1	1	2						2
Compression of brain		1			1				1
Contusion of face		8	7	1				6	14
Wound of face and mouth		14	13		1			24	38
Fracture of facial bones	1	6	4	3				1	8
Injuries of the alveoli and teeth		1	1						1
Contusion of the eye		2	2					2	4
Foreign body in cornea or conjunctiva		2	2					13	15
Wound of eyelid		2	1				1	9	11
Wound of the cornea								1	1
Wound of the parts within the orbit		2	2						2
Contusion of pinna								3	3
Wound of neck								1	1
Foreign body in the œsophagus								1	1
Contusion of the chest	1	18	17	2				16	35
Fracture of the ribs	3	17	15	5				3	23
Wound of parietes of chest		2	1	1					2
Contusion of back		19	14	4			1	13	32
Sprain of back		14	11	3				17	31

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE, 1894—Continued.

THE GREAT LAKES—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Injuries—Continued.									
LOCAL INJURIES—Continued.									
Wound of back		2	1		1			1	3
Wound of spine		1	1						1
Fracture of spine	1	1	1			1			2
Concussion of cord	1			1					1
Contusion of abdomen								5	5
Wound of parietes of abdomen		2	2					2	4
Contusion of the pelvis		2	1				1		2
Fracture and discoloration of pelvis		2		2					2
Contusion of testicle								2	2
Contusion of upper extremities	1	18	13	4			2	46	65
Sprain of the shoulder		4	4					48	52
Sprain of the elbow								8	8
Sprain of the wrist		8	6				2	22	30
Sprain of the fingers		1	1					5	6
Wound of the upper extremities	5	36	34	5	1		1	107	148
Fracture of the clavicle		2	1	1				4	6
Fracture of the scapula		1		1					1
Fracture of the humerus		4	2	1			1	1	5
Fracture of the radius		5	4	1				5	10
Fracture of the ulna		4	2	1			1	2	6
Fracture of both bones of forearm		3	2	1				1	4
Fracture of carpus, metacarpus, and phalanges	1	5	1	3			2	11	17
Dislocation of the humerus		5	3	1	1			3	8
Dislocation of the radius		2	1	1					2
Dislocation of the phalanges of thumb		1		1				1	2
Dislocation of the phalanges of fingers		1	1						1
Contusion of the lower extremities	2	53	40	10			5	56	111
Sprain of the hip								1	1
Sprain of the knee		4	3	1				10	14
Sprain of the ankle		25	23				2	27	52
Sprain of the foot	1			1				3	4
Wound of the lower extremities	3	32	22	10			3	39	74
Wound of joint, lower extremities								1	1
Fracture of femur	1	4		2	1		2	9	14
Fracture of patella		2	1	1					2
Fracture of leg, both bones	2	6	4	2		2		1	9
Fracture of tibia alone		1					1		1
Fracture of fibula alone		6	3				3	1	7
Fracture of tarsus		2	1	1				2	4
Fracture of metatarsus		1		1				1	2
Dislocation of the femur at the hip		1		1					1
Dislocation of the knee	1						1		1
AMPUTATIONS	1	3	3				1	6	10
Amputation of fingers	1	2	3					5	8
Amputation of leg		1					1		1
Amputation of toes								1	1

THE PACIFIC.

Diseases.	Remaining under treatment from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
TOTAL CASES	145	1,368	673	627	33	56	124	3,899	5,412
General Diseases	56	528	223	286	10	25	40	1,558	2,142
Measles								1	1
Influenza		54	26	28				79	133
Mumps		1	1					4	5
Simple continued fever		1	1						1
Enteric fever	2	18	15			3	2	1	21
Dysentery	3	8	7	1		1	2	10	21

Table VII.—Tabular Statement, by Districts, of Diseases and Injuries Treated during the Year ended June 30, 1894—Continued.

THE PACIFIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
General Diseases—Continued.									
Total Cases—Continued.									
Malarial intermittent fever	......	32	24	6	......	....	2	91	123
Malarial remittent fever	1	9	5	1	1	1	2	2	12
Malarial cachexia	......	3	1	2	......	....	......	8	11
Erysipelas, simple	2	9	10	......	......	....	1	6	17
Pyæmia	......	2	......	2	......	....	......	4	6
Septicæmia	......	1	......	1	......	....	......	1	2
Syphilis:									
Primary	1	13	1	12	......	....	1	41	55
Secondary	9	80	4	80	1	....	4	393	482
Gonorrhœa	8	50	35	22	......	....	1	517	575
Animal parasites	......	1	1	......	......	....	......	6	7
Vegetable parasites	......	1	......	1	......	....	......	......	1
Effects of excessive venery	......	......	......	......	......	....	......	1	1
Scurvy	1	7	3	4	......	1	......	8	16
Alcoholism	1	6	6	1	......	....	......	17	24
Delirium tremens	......	1	1	......	......	....	......	1	2
Hypospadia	......	......	......	......	......	....	......	2	2
Debility	2	6	3	5	......	....	......	16	24
Rheumatic fever	8	68	36	36	1	....	3	34	110
Rheumatism	6	74	37	38	......	....	5	229	309
Gout	......	3	1	1	......	....	1	1	4
Osteo-arthritis	1	4	......	4	......	....	1	1	6
Cysts	......	1	......	......	......	....	1	......	1
Nonmalignant new growth	1	6	2	4	1	....	......	12	19
Malignant new growth	1	4	1	......	2	2	......	2	7
Tubercle	9	59	......	35	4	17	12	54	122
Scrofula	......	1	......	1	......	....	......	5	6
Leprosy	......	1	......	......	......	....	1	......	1
Anæmia	......	2	2	......	......	....	......	5	7
Diabetes mellitus	......	2	......	1	......	....	1	6	8
Local Diseases	**56**	**608**	**300**	**252**	**21**	**29**	**62**	**1,850**	**2,514**
Diseases of the Nervous System	9	47	12	21	2	6	15	87	143
Congestion, cerebral	......	3	......	2	1	....	......	2	5
Hæmorrhage, cerebral	1	1	......	1	......	1	......	......	2
Inflammation:									
Of cerebral membranes	......	1	......	1	......	....	......	......	1
Of spinal cord and its membranes	......	1	......	1	......	....	......	......	1
Myelitis	1	1	......	1	......	....	1	......	2
Neuritis	......	1	......	1	......	....	......	1	2
Spastic spinal paralysis	1	......	......	......	......	....	1	......	1
Locomotor ataxy	......	2	......	1	......	....	1	......	2
Hemiplegia	3	6	......	3	1	1	4	2	11
Paraplegia	......	1	......	......	......	1	......	......	1
Local paralysis	2	2	1	......	......	2	1	7	11
Spasm of muscle	......	......	......	......	......	....	......	3	3
Neuralgia	......	7	3	1	......	....	3	39	46
Facial	......	2	2	......	......	....	......	3	5
Sciatica	......	11	3	5	......	....	3	14	25
Vertigo	......	2	1	......	......	....	1	3	5
Megrim	......	2	2	......	......	....	......	6	8
Epilepsy	1	4	......	4	......	1	......	7	12
Mental Diseases	......	5	......	2	2	....	1	15	20
Hypochondriasis	......	2	......	1	......	....	1	13	15
Dementia	......	3	......	1	2	....	......	2	5
Diseases of the Eye	......	19	5	12	1	....	1	53	72
Conjunctivitis	......	5	3	2	......	....	......	28	33
Pterygium	......	2	......	2	......	....	......	......	2
Keratitis	......	......	......	......	......	....	......	1	1
Opacity of cornea	......	1	......	1	......	....	......	2	3
Iritis	......	3	1	1	......	....	1	......	3
Atrophy of optic disk or papilla	......	2	......	2	......	....	......	......	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE PACIFIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE EYE—Continued.									
Inflammation of optic nerve	......	......	......	......	......	....	......	1	1
Neuro-retinitis	......	......	......	......	......	....	......	1	1
Retinitis	......	2	......	1	1	....	......	2	4
Cataract	......	1	......	1	......	....	......	......	1
Ametropia	......	1	......	1	......	....	......	1	2
Night-blindness	......	......	......	......	......	....	......	4	4
Snow-blindness	......	1	1	......	......	....	......	......	1
Day-blindness	......	......	......	......	......	....	......	3	3
Diplopia	......	......	......	......	......	....	......	1	1
Hæmatoma	......	......	......	......	......	....	......	2	2
Blepharitis	......	......	......	......	......	....	......	3	3
Stye	......	......	......	......	......	....	......	2	2
Trichiasis	......	......	......	......	......	....	......	1	1
Ectropion	......	1	......	1	......	....	......	......	1
Chalazion	......	......	......	......	......	....	......	1	1
DISEASES OF THE EAR	......	4	3	......	......	....	1	37	41
Hæmatoma of the auricle	......	......	......	......	......	....	......	1	1
Inflammation of the external meatus, acute	......	......	......	......	......	....	......	3	3
Abscess of the external meatus	......	1	1	......	......	....	......	3	4
Accumulation of wax	......	......	......	......	......	....	......	5	5
Inflammation of the middle ear	......	3	2	......	......	....	1	16	19
Obstruction of Eustachian tube	......	......	......	......	......	....	......	8	8
Deafness	......	......	......	......	......	....	......	1	1
DISEASES OF THE NOSE	......	7	1	5	......	....	1	27	34
Hypertrophy	......	1	......	1	......	....	......	5	6
Inflammation	......	2	......	2	......	....	......	......	2
Nasal catarrh	......	2	......	1	......	....	1	18	20
Abscess	......	1	......	......	......	....	......	......	1
Ulceration	......	......	......	......	......	....	......	1	1
Ozæna	......	1	1	1	......	....	......	3	4
DISEASES OF THE CIRCULATORY SYSTEM	4	28	......	21	2	3	6	31	63
Hydropericardium	......	1	......	......	......	1	......	......	1
Valvular disease:									
Aortic	1	6	......	5	......	....	2	8	15
Mitral	1	11	......	9	1	1	1	6	18
Angina pectoris	......	1	......	1	......	....	......	2	3
Syncope	......	......	......	......	......	....	......	2	2
Palpitation and irregular action of heart	......	2	......	1	......	....	1	8	10
Degeneration of arteries	......	1	......	1	......	....	......	......	1
Aneurism of arteries	1	5	......	3	1	1	1	3	9
Obstruction of arteries	1	......	......	......	......	....	1	......	1
Phlebitis	......	1	......	1	......	....	......	......	1
Varix	......	......	......	......	......	....	......	2	2
DISEASES OF THE RESPIRATORY SYSTEM	6	126	71	48	1	8	4	343	475
Laryngitis:									
Acute	......	2	1	1	......	....	......	2	4
Chronic	......	1	1	......	......	....	......	......	1
Catarrhal	......	......	......	......	......	....	......	1	1
Aphonia	......	......	......	......	......	....	......	3	3
Bronchitis:									
Acute	......	41	34	5	1	....	1	235	276
Chronic	1	16	4	12	......	1	......	74	91
Catarrhal	......	1	1	......	......	....	......	1	2
Spasmodic asthma	1	7	1	7	......	....	......	12	20
Passive congestion of lung	......	4	......	3	......	....	1	......	4
Hæmorrhage of lung	......	1	......	1	......	....	......	1	2
Pneumonia	1	29	17	9	......	4	......	5	35
Emphysema	......	......	......	......	......	....	......	1	1
Hydrothorax	......	2	......	1	......	1	......	......	2

TABLE VII.—TABULAR STATETENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE PACIFIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE RESPIRATORY SYSTEM—Continued.									
Pleurisy:									
Acute	2	18	10	7		2	1	6	26
Chronic		3	1	2					3
Empyema	1	1	1				1		2
Adhesions of pleura								2	2
DISEASES OF THE DIGESTIVE SYSTEM	4	103	58	36	4	4	5	477	584
Ulcer of the lips								1	1
Stomatitis								2	2
Ulcerative stomatitis		1		1					1
Abscess of the antrum	1	2	2	1					3
Caries of dentine and cementum								26	26
Abscess of dental periosteum								5	5
Inflammation of gums and alveoli		1	1					3	4
Toothache								1	1
Inflammation of the tongue								1	1
Ulcer of the tongue								3	3
Elongated uvula								1	1
Sore throat		1		1				46	47
Quinsy		9	8	1				8	17
Follicular tonsilitis		7	1	6				17	24
Ulceration of fauces								1	1
Inflammation of salivary glands								2	2
Follicular inflammation of pharynx		1	1					9	10
Stricture of œsophagus								1	1
Dysphagia		1					1		1
Inflammation of the stomach		22	13	6		2	1	123	145
Ulceration of the stomach		2		1		1		1	3
Dilatation of the stomach								1	1
Dyspepsia		3		2			1	64	67
Hæmorrhage of the intestines		1		1					1
Inflammation of the intestines:									
Catarrhal		5	5					5	10
Ulcerative		3	3					1	4
Hernia		7	3	3	1			37	44
Fistula of intestines		1			1				1
Diarrhœa		8	7	1				17	25
Constipation		3	2		1			42	45
Colic								3	3
Abscess of the rectum								1	1
Ulceration of the rectum								6	6
Piles:									
Internal		2	2					8	10
External	1	3		3	1			12	16
Fistula in ano	1	11	8	2		1	1	8	20
Fissure of the anus		1		1					1
Hypertrophy of the liver		3		2			1	3	6
Congestion of the liver								4	4
Hepatitis	1	2	1	2				11	14
Cirrhosis of liver		1		1					1
Jaundice		1		1				2	3
Obstruction of hepatic ducts and gall bladder		1	1						1
Ascites								1	1
DISEASES OF THE LYMPHATIC SYSTEM	5	30	21	7	3	1	3	85	120
Hypertrophy of the spleen		1				1			1
Hypertrophy of lymph-glands								2	2
Inflammation of lymph-glands		10	5	1	3		1	24	34
Suppuration of lymph-glands	5	18	15	6			2	59	82
Lymphadenoma		1	1						1
DISEASES OF THE URINARY SYSTEM	4	49	8	35		6	4	78	121
Congestion of kidney		1	1						1
Acute nephritis		15	2	13				11	26

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE PACIFIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE URINARY SYSTEM—Continued.									
Bright's disease	3	16	1	11		6	1	15	34
Hæmaturia								1	1
Phosphuria								1	1
Hypertrophy of bladder		1	1						1
Hæmorrhage of bladder		7	2	4			1	15	22
Inflammation of bladder:									
Acute		2	1	1				4	6
Subacute	1	6		5			2	22	29
Irritability of bladder								8	8
Incontinence of urine		1		1				1	2
DISEASES OF THE GENERATIVE SYSTEM	4	72	39	33	2	1	1	243	319
Urethritis								5	5
Gleet		1		1				23	24
Urinary abscess		1	1						1
Stricture of urethra, organic	1	27	13	13	1	1		49	77
Urinary fistula		1	1						1
Hypertrophy of prostate gland		1		1					1
Acute inflammatton of prostate gland								1	1
Chronic inflammation of prostate gland								3	3
Œdema of the penis								1	1
Inflammation of the penis								1	1
Inflammation of glans penis								16	16
Ulcer of penis	3	17	12	7			1	110	130
Phimosis		4	2	2				1	5
Paraphimosis		1		1				1	2
Abscess of the scrotum		1			1				1
Varicocele								2	2
Hydrocele of tunica vaginalis		5	4	1				5	10
Orchitis:									
Acute		12	5	7				14	26
Chronic		1	1					4	5
Epididymitis								2	2
Spermatorrhœa								5	5
DISEASES OF THE ORGANS OF LOCOMOTION	6	34	22	6	3		9	21	61
Ostitis		1					1		1
Periostitis								1	1
Caries		7	5	1	1				7
Necrosis		7	4	2			1	3	10
Ununited fracture, or false joint		1	1						1
Dropsy of joints								2	2
Synovitis:									
Acute	1	7	5	1	1		1	4	12
Chronic	3	1	1	1			2	2	6
Abscess of joints		1	1						1
Degeneration of cartilage	1	1					2		2
Psoas, lumbar, and other abscesses	1	1	1				1		2
Inflammation of muscles		1	1						1
Atrophy of muscles		1		1				1	2
Inflammation of tendons		1			1			1	2
Contraction of tendons and fasciæ		1	1						1
Flat-foot		1					1		1
Inflamed bursa		2	2					7	9
DISEASES OF THE CONNECTIVE TISSUE	4	34	20	10			8	47	85
Œdema								4	4
Inflammation		2	2					9	11
Abscess	4	32	18	10			8	34	70
DISEASES OF THE SKIN	10	48	39	15	1		3	286	344
Roseola		1		1					1
Urticaria								4	4
Eczema	1	3	3	1				56	60

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE PACIFIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE SKIN—Continued.									
Pityriasis								3	3
Lichen								9	9
Psoriasis								1	1
Herpes								13	13
Zona		1	1					6	7
Acne								9	9
Frostbite		1	1					6	7
Ulcer	9	27	20	12	1		3	91	127
Boil		4	4					40	44
Carbuncle		5	4	1				13	18
Whitlow		4	4					27	31
Onychia								1	1
Corn								3	3
Lupus		1	1					1	2
Wen		1	1					3	4
PARASITIC DISEASES OF THE SKIN		2	1	1				20	22
Ringworm								6	6
Tinea versicolor		2	1	1				5	7
Itch								7	7
Phthiriasis								1	1
Unclassified								1	1
POISONED WOUNDS								1	1
Venomous animals								1	1
Injuries	**33**	**232**	**150**	**89**	**2**	**2**	**22**	**490**	**755**
GENERAL INJURIES	4	24	19	8			1	42	70
Burns and scalds	2	7	7	2				20	29
Effects of cold		2	1				1	15	17
Effects of chemical irritants	1		1						1
Multiple injury	1	15	10	6				3	19
Exhaustion								4	4
LOCAL INJURIES	29	208	131	81	2	2	21	448	685
Wound of nerve	1			1					1
Strain of muscles	1	4	3	1			1	5	10
Strain of tendons								4	4
Effects of irritants		1	1					2	3
Abrasion of skin								4	4
Contusion of scalp		2	1	1					2
Scalpwound:									
Bone not exposed	2	6	6	2				19	27
Bone exposed								2	2
Fracture of the vault of the skull		2		1		1			2
Concussion of brain		1	1						1
Contusion of face		3	2				1	8	11
Wound of face and mouth		3	2					21	24
Fracture of facial bones		3	1	1			1	1	4
Contusion of the eye		1		1				1	2
Foreign body in cornea or conjunctiva								6	6
Wound of eyelid		1	1						1
Wound of the cornea								1	1
Foreign body in external meatus								1	1
Contusion of the chest		6	2	4				21	27
Dislocation of costal cartilages								1	1
Fracture of the ribs	1	12	9	4				3	16
Wound of parietes of chest		1		1				1	2
Contusion of back	1	5	2	3			1	15	21
Sprain of back		6	5	1				42	48
Wound of back		1		1					1
Wound of spine		1		1					1
Fracture of spine	1			1					1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE PACIFIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Injuries—Continued.									
LOCAL INJURIES—Continued.									
Wound of parietes of abdomen		1				1			1
Contusion of the urethra, perineum, scrotum, and penis		1	1					3	4
Fracture and dislocation of pelvis		1					1		1
Contusion of testicle		1	1					4	5
Contusion of upper extremities	2	8	7	1			2	28	38
Sprain of the shoulder								9	9
Sprain of the wrist		2		2				16	18
Sprain of the fingers								4	4
Wound of the upper extremities	4	18	15	5			2	88	110
Fracture of the clavicle		2	1				1	1	3
Fracture of the scapula		1	1						1
Fracture of the humerus		2	1	1				1	3
Fracture of the radius	1	6	3	2			2		7
Fracture of the ulna		1	1					2	3
Fracture of both bones of forearm		2		1			1	1	3
Fracture of carpus, metacarpus, and phalanges		7	1	4			2	13	20
Dislocation of the clavicle		1		1				1	2
Dislocation of the humerus		4	1	2	1			2	6
Dislocation of the carpus		1		1					1
Dislocation of the metacarpus								1	1
Contusion of the lower extremities		20	12	6			2	42	62
Sprain of the hip	1			1					1
Sprain of the knee	1	2		2	1			21	24
Sprain of the ankle	2	13	11	4				15	30
Sprain of the foot								1	1
Wound of the lower extremities	1	32	23	10				30	63
Fracture of femur	5	2	3	2			2		7
Fracture of patella		2		1			1		2
Fracture of leg, both bones	2	6	5	2			1	2	10
Fracture of tibia alone		2	1	1				2	4
Fracture of fibula alone	2	3	3	2					5
Fracture of metatarsus		2		2					2
Fracture of phalanges of toes		3	2	1					3
Dislocation of the knee	1			1				1	2
Dislocation of the foot at the ankle		2	1	1				1	3
AMPUTATIONS		1	1					1	2
Amputation of fingers		1	1					1	2
QUARANTINE.									
TOTAL CASES	1	29	23			6	1	80	110
General Diseases		23	18			4	1	31	54
Influenza								2	2
Yellow fever		10	6			3	1		10
Dysentery		1	1					1	2
Malarial intermittent fever		1	1					2	3
Malarial remittent fever		10	10					9	19
Syphilis:									
Primary								1	1
Secondary								4	4
Gonorrhœa								2	2
Delirium tremens								1	1
Debility								1	1
Rheumatic fever								1	1
Rheumatism								6	6
Tubercle		1				1		1	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

QUARANTINE—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged. Recovered.	Discharged. Improved.	Discharged. Not improved.	Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
Local Diseases	1	5	5			1		40	46
DISEASES OF THE NERVOUS SYSTEM								4	4
Neuralgia, facial								3	3
Chorea								1	1
DISEASES OF THE EAR								1	1
Tinnitus								1	1
DISEASES OF THE NOSE								1	1
Epistaxis								1	1
DISEASES OF THE RESPIRATORY SYSTEM	1		1					5	6
Bronchitis:									
Acute								1	1
Chronic								2	2
Spasmodic asthma								2	2
Pneumonia	1		1						1
DISEASES OF THE DIGESTIVE SYSTEM		4	3			1		27	31
Stomatitis								1	1
Caries of dentine and cementum								3	3
Toothache								1	1
Follicular tonsilitis								2	2
Inflammation of the stomach		1				1			1
Dyspepsia								5	5
Diarrhœa		2	2					2	4
Constipation								8	8
Colic								2	2
Abscess of the rectum								1	1
Piles, internal								1	1
Congestion of the liver								1	1
Biliary colic		1	1						1
DISEASES OF THE URINARY SYSTEM								1	1
Inflammation of bladder, chronic								1	1
DISEASES OF THE SKIN								1	1
Ulcer								1	1
PARASITIC DISEASES OF THE SKIN		1	1						1
Unclassified		1	1						1
Injuries		1				1		9	10
LOCAL INJURIES		1				1		9	10
Contusion of scalp								1	1
Contusion of the chest								1	1
Wound of parietes of chest		1				1			1
Contusion of back								1	1
Contusion of upper extremities								1	1
Sprain of the fingers								1	1
Wound of joint, upper extremities								3	3
Wound of joint, lower extremities								1	1

ABLE VIII.—Tabular Statement, by Districts, of Causes of Mortality among Patients of the Service during the Year ended June 30, 1894.

Causes of death.	Total.	Districts.								
		North Atlantic.	Middle Atlantic.	South Atlantic.	The Gulf.	The Ohio.	The Mississippi.	The Great Lakes.	The Pacific.	Quaratine.
Total Deaths from all Causes	**448**	**43**	**83**	**78**	**33**	**29**	**53**	**67**	**56**	**6**
ROM DISEASES	423	41	78	75	31	29	50	60	54	5
ROM INJURIES	25	2	5	3	2	......	3	7	2	1
General Diseases	**214**	**20**	**36**	**43**	**14**	**14**	**23**	**35**	**25**	**4**
mallpox	......	......	......	......	......	......	......	1	......	......
nfluenza	......	1	......	2	1	......	1	1	......	......
nteric fever	......	3	7	6	1	2	......	8	3	......
ypho-malarial fever	......	......	1	1	......	......	1	......	......	......
ellow fever	......	......	......	......	......	......	......	......	......	3
ysentery	......	1	2	3	3	......	1	......	1	......
alarial intermittent fever	......	......	3	......	1	......	3	2	......	......
alarial remittent fever	......	......	......	9	......	......	3	2	1	......
alarial cachexia	......	2	......	......	......	......	......	......	......	......
rysipelas:										
Simple	......	......	......	......	......	......	......	1	......	......
Phlegmonous	......	......	......	......	......	......	......	1	......	......
yæmia	......	......	1	......	......	......	......	......	......	......
yphilis:										
Primary	......	......	1	......	......	......	......	......	......	......
Secondary	......	......	......	3	1	......	......	1	......	......
curvy	......	......	......	......	......	......	......	......	1	......
lcoholism	......	......	......	......	1	......	2	2	......	......
ebility	......	......	......	......	1	......	......	......	......	......
heumatic fever	......	......	1	......	......	......	......	......	......	......
heumatism	......	......	2	2	......	1	1	1	......	......
onmalignant new growth	......	......	......	......	......	......	......	1	......	......
alignant new growth	......	2	1	1	......	......	1	1	2	......
ubercle	......	11	17	16	5	11	10	13	17	1
Local Diseases	**209**	**22**	**42**	**32**	**17**	**15**	**26**	**25**	**29**	**1**
ISEASES OF THE NERVOUS SYSTEM	25	3	4	2	1	2	4	3	6	......
Congestion, cerebral	......	......	......	1	......	......	......	......	1	......
Hæmorrhage, cerebral	......	......	......	......	......	......	1	......	......	......
Inflammation of brain and its membranes	......	......	......	......	......	1	......	......	......	......
Spinal meningitis	......	......	......	......	......	......	1	......	......	......
Abscess of brain	......	1	......	1	......	......	......	1	......	......
Softening of brain	......	......	......	......	......	......	1	......	......	......
Progressive muscular atrophy	......	......	1	......	......	......	......	......	......	......
Locomotar ataxy	......	......	......	......	......	......	......	1	......	......
Paralysis	......	1	......	......	1	......	......	......	......	......
Hemiplegia	......	......	2	......	......	1	......	......	1	......
Paraplegia	......	1	......	......	......	......	......	......	1	......
Local paralysis	......	......	......	......	......	......	......	......	2	......
Eclampsia	......	......	1	......	......	......	......	......	......	......
Epilepsy	......	......	......	......	......	......	1	1	1	......
ENTAL DISEASES	4	1	......	2	1	......	......	......	......	......
Melancholia	......	......	......	1	1	......	......	......	......	......
Dementia	......	1	......	......	......	......	......	......	......	......
Idiocy	......	......	......	1	......	......	......	......	......	......
ISEASES OF THE CIRCULATORY SYSTEM	25	2	5	4	......	4	2	6	2	......
Hydropericardium	......	......	......	......	......	......	......	......	1	......
Pericarditis	......	......	......	......	......	......	1	......	......	......
Valvular disease:										
Aortic	......	......	1	......	......	......	......	......	......	......
Mitral	......	......	2	2	......	3	1	5	1	......
Dilatation of heart	......	......	......	1	......	......	......	......	......	......
Palpitation and irregular action of heart	......	......	1	......	......	......	......	......	......	......
Aneurism of arteries	......	1	......	1	......	1	......	1	......	......
Rupture of arteries	......	1	......	......	......	......	......	......	......	......
Phlebitis	......	......	1	......	......	......	......	......	......	......

TABLE VIII.—TABULAR STATEMENT, BY DISTRICTS, OF CAUSES OF MORTALITY, ETC., DURING THE YEAR ENDED JUNE 30, 1894—Continued.

Causes of death.	Total.	Districts.								
		North Atlantic.	Middle Atlantic.	South Atlantic.	The Gulf.	The Ohio.	The Mississippi.	The Great Lakes.	The Pacific.	Quaratine.
Local Diseases—Continued.										
DISEASES OF THE RESPIRATORY SYSTEM.	74	6	22	10	8	6	11	5	6	......
Bronchitis:										
Acute	......	......	2	......	1	......	......	......	......	......
Chronic	......	......	3	......	......	......	......	......	1	......
Catarrhal	......	1	......	......	......	......	......	......	......	......
Spasmodic asthma	......	......	......	1	......	......	......	......	......	......
Passive congestion of lung	......	......	......	1	......	......	......	......	......	......
Pneumonia	......	5	8	4	6	5	7	4	2	......
Abscess of lung	......	......	......	......	......	......	1	......	......	......
Gangrene of lung	......	......	......	......	......	1	......	......	......	......
Pneumonic phthisis:										
Acute	......	......	......	4	1	......	......	1	......	......
Chronic	......	......	4	......	......	......	1	......	......	......
Pleurisy:										
Acute	......	......	4	......	......	......	2	......	3	......
Chronic	......	......	1	......	......	......	......	......	......	......
DISEASES OF THE DIGESTIVE SYSTEM.	38	4	7	6	3	......	5	6	6	1
Quinsy	......	......	......	......	......	......	......	1	......	......
Inflammation of stomach	......	......	1	2	2	......	1	......	2	1
Ulceration of stomach	......	......	......	......	......	......	......	......	1	......
Dyspepsia	......	1	1	......	......	......	......	......	......	......
Hæmorrhage of intestines	......	......	......	......	......	......	2	......	......	......
Inflammation of intestines:										
Catarrhal	......	......	......	......	......	......	1	......	......	......
Ulcerative	......	......	......	......	......	......	......	1	......	......
Intussusception	......	......	......	1	......	......	......	......	......	......
Hernia	......	1	......	......	......	......	......	1	......	......
Diarrhœa	......	1	1	1	......	......	......	......	......	......
Prolapsus of rectum	......	......	1	......	......	......	......	......	......	......
Fistula in ano	......	......	......	......	......	......	......	......	1	......
Atrophy of the liver	......	......	......	......	......	......	1	......	......	......
Hepatitis	......	......	......	......	......	......	......	1	......	......
Cirrhosis of liver	......	......	1	1	1	......	......	2	1	......
Lardaceous liver	......	......	......	1	......	......	......	......	......	......
Ascites	......	......	1	......	......	......	......	......	......	......
Peritonitis	......	1	1	......	......	......	......	......	......	......
DISEASES OF THE URINARY SYSTEM.	24	4	3	4	2	2	3	3	3	......
Acute nephritis	......	......	1	1	......	......	......	......	......	......
Bright's disease	......	4	2	1	......	2	2	3	3	......
Calculus in kidney	......	......	......	1	1	......	......	......	......	......
Diabetes insipidus	......	......	......	......	1	......	1	......	......	......
Inflammation of bladder	......	......	......	1	......	......	......	......	......	......
DISEASES OF THE GENERATIVE SYSTEM.	12	2	1	2	1	1	......	1	4	......
Stricture of the urethra, organic	......	1	1	1	......	......	......	......	1	......
Urinary fistula	......	......	......	......	......	1	......	1	2	......
Impacted calculus of urethra	......	1	......	1	1	......	......	......	1	......
DISEASES OF THE SKIN	7	......	......	2	1	......	1	1	2	......
Pemphigus	......	......	......	1	......	......	......	1	1	......
Carbuncle	......	......	......	1	1	......	1	......	......	......
Gangrene	......	......	......	......	......	......	......	......	1	......
Injuries.	**25**	**2**	**5**	**3**	**2**	......	**3**	**7**	**2**	**1**
GENEARL INJURIES	6	1	1	2	1	......	......	1	......	......
Burns and scalds	......	1	1	1	1	......	......	1	......	......
Heat stroke	......	......	......	1	......	......	......	......	......	......
LOCAL INJURIES	19	1	3	1	1	......	4	6	2	1
Rupture of veins	......	......	......	......	......	......	1	1	......	......
Fracture of the vault of the skull	......	1	......	......	......	......	1	1	1	......
Compression of brain	......	......	1	......	......	......	1	......	......	......
Wound of neck	......	......	......	......	1	......	......	......	......	......
Contusion of chest	......	......	......	1	......	......	1	......	......	......
Wound of the parietes of the chest	......	......	......	......	......	......	......	1	......	
Fracture of spine	......	......	......	......	......	......	......	1	......	......
Wound of the parietes of abdomen	......	......	1	......	......	......	......	......	1	......
Contusion of lower extremity	......	......	1	......	......	......	......	......	......	......
Fracture of femur	......	......	......	......	......	......	......	......	......	......
Fracture of leg, both bones	......	......	......	......	......	......	......	2	......	......

TABLE IX.—SURGICAL OPERATIONS, FISCAL YEAR 1894.

Operations.	Number of cases.	Remarks.
Total number of Operations	**900**	
REMOVAL OF TUMORS	48	
For epithelioma of lip	2	Excision.
For epithelioma of testicle	1	Castration.
For sarcoma of hip	1	Excision.
For sarcoma of arm	1	Do.
For fibroma of penis	1	Do.
For fibroma of elbow	1	Do.
For lipoma (shoulder, testicle, back, and neck)	9	Do.
For papillomata of penis	1	Circumcision.
For papillomata of scalp	2	Excision.
For papillomata of groin	1	Do.
For cysts (sebaceous)	13	Dissected out.
For cysts of neck	1	Excision.
For cysts of penis	1	Do.
For cysts of nose	1	Do.
For cysts dermoid	1	Do.
For cystiform hæmatoma	2	Aspiration.
For ranula	1	Excision.
For condylomata of anus	1	Removed with cautery.
For keloid	1	Excision.
For osteo-chondroma	1	Do.
For bursal tumor of hand	2	Incised and curetted.
For bursal tumor of hip	1	Excision.
For polypus of external ear	1	Do.
REMOVAL OF FOREIGN BODIES	1	
For piece of bone in rectum	1	Removed.
OPENING OF ABSCESSES	45	
For abscess of connective tissue	24	Incised, curetted, and packed.
For abscess of connective tissue of neck with œdema of glottis.	1	Tracheotomy; death.
For abscess of perineum	3	Incised and packed.
For abscess of face	1	Do.
For abscess over sacrum	1	Incised and drained.
For abscess of leg	1	Do.
For abscess of foot	1	Do.
For abscess of back	1	Do.
For abscess ischiorectal	2	Incised and packed; 1 unsuccessful
For abscess of testicle	1	Incised and drained.
For abscess of scrotum	2	Do.
For abscess of buttocks	3	Incised and packed; death, 1.
For abscess of breast (tubercular)	1	Incised and packed.
For abscess of rectum	1	Do.
For abscess psoas	2	Do.
OPERATIONS ON NERVES	3	
For sciatica of both legs	1	Nerve stretched.
For cicatrix of arm producing paralysis	1	Musculo-spiral nerve dissected from cicatrix.
For wound of foot	1	Portion of plantar nerve excised.
OPERATIONS ON THE EYE AND APPENDAGES	13	
For glaucoma	1	Iridectomy.
For panophthalmitis	4	Enucleation of eyeball.
For rupture of eyeball	1	Do.
For pterygium	2	Excision.
For chalazion	1	Incised and scraped.
For stricture of nasal duct	1	Dilated.
For abscess of lachrymal sac	2	Incised.
For foreign body in conjunctiva	1	Removed.
OPERATIONS ON FACE, NOSE, AND MOUTH	22	
For elongation of uvula	1	Portion of uvula removed.
For necrosis of jaw	1	Dead bone removed.
For fracture of inferior maxilla	3	Reduction fragments wired.
For caries of inferior maxilla	3	Osteotomy, 1; curetted, 2.
For necrosis of upper jaw	1	Sequestrum removed.
For epithelioma of face	1	Excision.
For polypus of nose	3	Removed.
For hypertrophy of mucous membrane of nose	7	Portion of membrane removed.
For abscess of antrum	2	Tooth removed and drained.
OPERATIONS ON THE SKULL AND CONTENTS	13	
For depressed fracture of skull	4	Trephined and bone elevated.
For compound fracture of skull with depression	2	Depressed bone elevated, death, 1.
For suppuration of mastoid cell	3	Opened and drained.
For inflammation of middle ear	1	Drum incised.

TABLE IX.—SURGICAL OPERATIONS, FISCAL YEAR 1894—Continued.

Operations.	Number of cases.	Remarks.
OPERATIONS ON THE SKULL AND CONTENTS—Cont'd.		
For furuncle of external auditory canal	1	Incised.
For scalp wounds	1	Trephined.
For abscess of brain	1	Trephined; death.
OPERATIONS ON THE ARTERIES	1	
For popliteal aneurism	1	Ligation of femoral artery.
OPERATIONS ON VEINS	2	
For phlebitis	1	Resection of vein.
For varicose veins	1	Excision of veins.
OPERATIONS ON THE RESPIRATORY ORGANS	26	
For pleurisy with effusion	19	Paracentesis.
For empyema	4	Paracentesis unsuccessful, 1; paracentesis and drainage, 2; death, 1; resection of ribs, 1 unsuccessful.
For pericarditis with effusion	1	Paracentesis of pericardium.
For incised wound of chest	1	Dressed.
For punctured wound of back; lung injured	1	Piece of fork removed.
OPERATIONS ON THE ORGANS OF DIGESTION	116	
For hernia, inguinal oblique	16	Radical cure.
For hernia, inguinal direct	3	Do.
For hernia, inguinal strangulated	2	Herniotomy.
For appendicitis	5	Laparotomy and removal of appendix; deaths, 2.
For fistula in ano	34	Incised and curetted; unsuccessful, 2.
For hemorrhoids internal	17	Ligated, clamp, and cautery, 4; Whitehead's operation, 1; injection carbolic acid, 1.
For hemorrhoids external	16	Ligated, excised, clamp, and cautery, 1.
For polapsus of rectum with hemorrhoids	2	Whitehead's operation, 1; ligation and excision, 1.
Do	1	Linear cauterization.
For wound of sphincter ani	1	Sutured.
For ascites	19	Paracentesis of abdomen; death, 1.
OPERATIONS ON THE LYMPHATIC ORGANS	189	
For inflammation of lymph-glands	100	Enucleation, 67; incised and curetted, 33.
For suppuration of lymph-glands	72	Enucleation, 52; incised and curetted, 20.
For tubercular glands of neck	6	Enucleation.
For enlarged glands of neck	6	Enucleation, injection of iodoform emulsion.
For tubercular glands of axilla	3	Enucleation.
For syphilitic adenitis	1	Incised and curetted.
For tubercular lymphangitis	1	Abscess incised.
OPERATIONS ON THE URINARY ORGANS	130	
For stricture of urethra		
Gradual dilatation	23	Death, 1.
Forcible dilatation	4	
Internal urethrotomy	84	
External urethotomy	10	Death, 3; perineal section with suprapubic cystotomy, 1.
For stricture of meatus of urethra	2	Meatotomy.
For rupture of urethra	1	Perineal section.
For fistula of urethra	2	Perineal section internal urethrotomy, 1.
For wound of bladder	2	Restoration; unsuccessful, 1.
For papilloma of bladder	1	Supra-pubic cystotomy; tumor removed.
For carcinoma of bladder and urethral fistula	1	Perineal section.
OPERATIONS ON THE ORGANS OF GENERATION	112	
For phimosis	82	Circumcision, prepuce slit, 4.
For ulcer of penis	2	Excision and cauterization.
For epithelioma of glans penis	1	Amputation of glans penis.
For gangrene of prepuce	1	Circumcision.
For phagadæna of penis and groin	1	Curetted.
For paraphimosis (gangrene, 1)	5	Circumcised 4, prepuce slit.
For hydrocele	13	Tapped and carbolic acid injected; iodine injected, 1; unsuccessful, 5.
For chronic orchitis	2	Castration.
For tuberculosis of testicle	2	Do.
For varicocele	2	Subcutaneous ligation.
For hæmatocele	1	Incised and clot removed.

TABLE IX.—SURGICAL OPERATIONS, FISCAL YEAR 1894—Continued.

Operations.	Number of cases.	Remarks.
OPERATIONS ON THE ORGANS OF LOCOMOTION	92	
Bones:		
For fracture of ulna	11	Reduction and splint; excision of elbow joint, 1.
For fracture of tibia (compound)	1	Reduction and splint.
For fracture of tibia	1	Do.
For fracture of tibia (ununited)	1	Fragments wired.
For fracture of tibia and fibula	2	Reduction and splint.
For fracture of femur (compound)	1	Reduction and splint; unsuccessful.
For fracture of femur	1	Reduction and splint.
For fracture of patella	2	Fragments wired.
For fracture of humerus	2	Reduction and splint.
For fracture of forearm (both bones)	1	Do.
For fracture ununited	1	Osteotomy.
For necrosis of tibia	7	Bone scraped; sequestra removed, 3.
For necrosis of ileum	1	Scraped and portion of bone removed.
For necrosis of finger	3	Dead bone removed.
For necrosis of fibula	1	Do.
For necrosis of small bone of foot	1	Osteotomy.
For caries of ilium	1	Curetted.
For caries of tibia	2	Bone scraped and skin grafted.
For caries of fibula	1	Abscess incised.
For caries of tarsus	1	Curetted; unsuccessful.
For caries of toe	1	Curetted.
For caries of metatarsal bones	1	Dead bone removed.
For caries of radius	1	Curetted.
Joints:		
For dislocation of shoulder	6	Reduction.
For dislocation of clavicle	1	Do.
For dislocation of head of tibia	1	Do.
For dislocation of hip	1	Do.
For dislocation of radius	1	Do.
For dislocation of carpus (old)	1	Unsuccessful; only partial reduction.
For dislocation of ankle	1	Reduction.
For tuberculosis of acromio-clavicular joint	1	Diseased bone removed.
For ankylosis of shoulder joint	2	Forcible extension and flexion.
For ankylosis of phalanges of finger	1	Subcutaneous tenotomy.
For anoylsis of elbow joint	1	Excision of head of radius.
For synovitis of knee joint	6	Aspiration.
For bunion	1	Excision of metatarso-phalangeal joint.
For abscess of knee joint	1	Opened and drained.
For inflamed ursa of knee joint	3	Aspirated and injected with tincture of iodine; 2 unsuccessful.
Tendons:		
For contusion of hand	1	Adherent tendon released.
For talipes equinus	1	Subcutaneous tenotomy.
For inflammation of sheath of tendon	1	Curetted.
For contraction of thumb	1	Released by incision.
For contraction of toe	1	Tenotomy.
Miscellaneous:		
For gunshot wound of leg, with abscess	1	Incised, curetted, and packed.
For gunshot wound of wrist, with caries of carpal bones.	1	Dead bone removed.
For painful cicatrix of finger	1	Cicatrix removed.
For burn of foot	1	Skin grafting.
For wound of foot	2	Exploratory incision.
For whitlow	1	Incision.
For wound of thigh	1	Skin grafting.
For wound of hand (poisoned)	2	Incised.
Amputations	58	
Finger for gangrene	2	
Finger for contraction	2	
Finger for lacerated wound	5	
Finger for frostbite	5	
Finger for poisoned wound	5	
Finger for abscess	2	
Finger for fracture (compound)	2	
Finger for necrosis	16	
Finger for whitlow	[illegible]	
Thumb for whitlow	2	Necrosis, 1.
Hand for scald	1	
Humerus for compound comminuted fracture of forearm.	1	Just above condyles.
At shoulder joint	1	For paralysis of arm.
At hip joint	1	Tuberculosis of joint.
At middle third of thigh	1	Disease of knee joint.
At lower third of leg	1	Necrosis of tarsus.
Leg for tuberculosis of joint	1	
Leg for compound comminuted fracture	1	

TABLE IX.—SURGICAL OPERATIONS, FISCAL YEAR 1894—Continued.

Operations.	Number of cases.	Remarks.
OPERATIONS ON THE ORGANS OF LOCOMOTION—Continued.		
Amputations—Continued.		
Both legs for compound fracture	1	Double amputation; death.
Foot for fracture metatarsal bone	1	
Great toe for senile gangrene	1	
Toe for necrosis	2	
Three toes for compound comminuted fracture.	1	
Reamputation:		
Finger for necrosis	2	
Leg for caries of tibia	1	
OPERATIONS ON THE SKIN	8	
For poisoned wound of hand	1	Plastic operation.
For ulcer of skin	6	Skin grafting; curetted, 2.
For frostbite	1	Skin grafting.
UNCLASSIFIED	17	
For hypertrophy of tonsils	2	Removal of tonsils.
For onychia	1	Removal of nail.
For encysted bullet in abdominal wall	1	Removed bullet.
For gunshot wound of back	1	Bullet removed.
For necrosis of lumbar vertebra	1	Scraped and packed.
For perineal fistula	2	Radical cure.
For bursitis	3	Incised and packed, aspirated, 1.
For carbuncle of back	1	Incised and scraped.
For caries of sternum	1	Bone scraped.
For phagadæna of groin	1	Curetted.
For gunshot wound of neck	1	Bullet removed.
For scalp wound	2	Sutured.
For necrosis of rib	4	Curetted, 2 unsuccessful; resection of rib (1), unsuccessful.

TABLE X.—RATIO OF DEATHS FROM SPECIFIC CAUSES.

Deaths from—	Per 100 from all causes.	Deaths from—	Per 100 from all causes.
General diseases	47.70	Diseases of the digestive organs	8.48
Diseases of the nervous system	5.58	Diseases of the urinary system	5.35
Diseases of the circulatory system	5.58	Injuries	5.58
Diseases of the respiratory system	16.51	From all other causes	5.57

TABLE XI.—RATIO OF DEATHS IN EACH DISTRICT.

Districts.	Per 100 patients treated in hospital.	Districts.	Per 100 patients treated in hospital.
North Atlantic	2.36	The Mississippi	3.99
Middle Atlantic	4.17	The Great Lakes	2.69
South Atlantic	4.00	The Pacific	3.70
The Gulf	2.38	The quarantine stations	1.32
The Ohio	2.51		

TABLE XII.—COMPARATIVE EXHIBIT—MORTALITY PER 100 PATIENTS TREATED IN HOSPITAL, BY DISTRICTS, 1885–1894.

Districts.	General average.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.
North Atlantic	2.94	3.95	3.09	3.04	3.53	3.25	2.65	2.50	2.62	2.46	2.36
Middle Atlantic	3.99	3.34	3.27	4.85	4.80	3.92	4.66	3.77	3.44	3.69	4.17
South Atlantic	3.24	3.05	3.54	3.53	2.54	3.55	3.64	2.56	2.71	3.37	4.00
The Gulf	3.17	2.49	2.96	3.82	2.78	3.08	3.40	3.88	3.63	3.29	2.38
The Ohio	2.59	2.43	3.05	3.06	2.01	3.52	2.26	2.54	1.53	3.01	2.51
The Mississippi	3.59	2.93	2.79	4.19	4.78	3.52	3.04	3.67	3.37	3.64	3.99
The Great Lakes	2.81	2.79	2.37	2.72	2.83	2.93	2.63	2.44	4.11	2.76	2.61
The Pacific	4.23	3.30	5.72	4.59	4.45	4.22	4.42	4.43	3.83	3.73	3.76

TABLE XIII.—COMPARATIVE EXHIBIT—RATIO OF DEATHS FROM SPECIFIC CAUSES, 1885–1894.

Deaths from—	General average.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.
General diseases	47.43	46.61	48.40	45.63	46.58	45.47	50.20	52.66	43.42	47.70	47.70
Diseases of the—											
Nervous system	5.44	8.07	4.91	4.79	6.84	5.69	4.06	3.69	6.05	4.81	5.58
Circulatory system	8.42	10.42	9.09	7.29	10.04	7.58	5.81	9.84	9.60	8.99	5.58
Respiratory system	16.00	14.06	16.22	17.50	14.96	17.26	19.10	15.16	15.85	13.38	16.51
Digestive system	7.62	9.90	7.37	7.08	8.97	7.37	6.30	5.33	7.30	7.11	8.48
Urinary system	5.16	5.21	4.18	6.25	5.34	4.63	4.67	4.71	4.80	6.48	5.35
Injuries	6.26	3.39	5.41	7.92	4.50	8.00	5.81	5.33	7.72	8.99	5.58
From all other causes	3.73	2.34	4.42	3.54	2.77	4.00	3.65	3.28	5.26	2.54	5.57

TABLE XIV.—COMPARATIVE EXHIBIT—AVERAGE DURATION OF TREATMENT IN HOSPITAL IN EACH DISTRICT, 1885–1894.

Districts.	General average.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.
North Atlantic	27.10	30.22	26.56	23.89	26.76	30.05	29.21	29.68	24.37	24.12	26.14
Middle Atlantic	26.51	25.32	25.84	29.21	26.99	26.92	26.32	26.81	26.87	26.29	24.60
South Atlantic	27.46	26.06	26.72	27.99	26.53	27.91	28.27	26.19	26.26	29.23	29.48
The Gulf	21.73	18.63	19.43	20.82	23.24	24.55	23.21	21.07	21.97	22.33	22.13
The Ohio	23.16	23.18	23.61	21.87	21.62	22.52	24.52	24.92	23.81	23.37	22.80
The Mississippi	21.20	20.28	20.79	21.72	21.23	22.60	20.88	22.61	20.59	19.84	21.51
The Great Lakes	29.58	28.10	28.61	26.31	26.72	29.69	30.82	27.09	27.82	27.07	28.32
The Pacific	30.98	31.09	29.74	29.72	29.96	31.12	33.68	32.68	36.92	40.27	43.57

TABLE XV.—STATEMENT OF MORTALITY OF PASSENGERS ON VOYAGES FROM FOREIGN PORTS TO THE UNITED STATES, JULY 1, 1893, TO JUNE 30, 1894.

Date.	Name of vessel.	Where from.	Sex.	Age.	Causes of death as reported to customs officer.
Nov. 23	Aller	Bremen	Male	35	Apoplexy.
Jan. 17	Amsterdam	Rotterdam	do	20	Phthisis.
Jan. 4	Belgravia	Mediterranean ports	do	61	Senile decay.
Jan. 25	Bohemia	Hamburg	Female	40	Paralysis of heart.
Apr. 14	Dania	do	do	61	Pneumonia.
Nov. 21	Dresden	Bremen	Male	47	Œdema of lung.
Nov. 24	do	do	do	47	Do.
Oct. 9	Havre	Bordeaux	do	52	Disappeared at seaport.
Oct. 18	Havel	Bremen	Female	8	Convulsions.
Feb. 7	Leibnitz	Rio Janeiro	Male	20	Intermittent fever.
Oct. 21	Marsala	Hamburg	Female	34	Eclampsia.
Nov. 13	Neckar	Bremen	do	60	Pneumonia.
Sept. 18	Nestorian	Glasgow	Male	48	Fatty degeneration of heart.
Dec. 16	Pennsylvania	Antwerp	Female	72	Pneumonia.
Feb. 7	Rugia	Liverpool	Male	45	Consumption.
Oct. 13	Russia	Hamburg	Female	18	Gastric enteritis.
Oct. 13	do	do	Male	15	Enteritis.
Apr. 17	St. Numidian	Liverpool	Female	45	Liver complaint.
Dec. 7	Stuttgart	Bremen	Male	60	Apoplexy.
Dec. 7	do	do	Female	31	Heart disease.
Dec. 7	do	do	do	30	Apoplexy.
Dec. 14	Teutonic	Liverpool	do	85	Exhaustion.
Jan. 23	Veendam	Rotterdam	Male	35	Cerebral hemorrhage.
May 19	Venetia	Stettin	do	37	Alcoholism.

TABLE XVI.—NATIVITY OF PATIENTS TREATED IN UNITED STATES MARINE HOSPITALS DURING THE PAST FISCAL YEAR.

Countries.	Number.	Countries.	Number.
Total	13,725	Japan	15
		Mexico	13
Africa	12	New Zealand	12
Australia	10	Norway	800
Austria	29	Philippine Islands	16
Azore Islands	8	Poland	22
Canada	328	Portugal	32
China	15	Prince Edward Island	20
Denmark	221	Russia	69
England	602	Scotland	110
Finland	212	Spain	30
France	69	Sweden	520
Germany	500	Switzerland	25
Greece	20	United States of America	9,000
Holland	50	Wales	24
India	12	West Indies	10
Ireland	800	Unknown	90
Italy	29		

PUBLIC HEALTH SERVICE.

It may be justly claimed that all the work of the Marine-Hospital Service as set forth in the foregoing pages pertains essentially to the public health, but the more direct efforts of the Service in this behalf may be described under the following heads:

1. Hygienic Laboratory of the Marine-Hospital Service.
2. Sanitary reports and statistics.
3. Sanitary inspection service.
4. The national quarantine stations.
5. Revision of maritime quarantine regulations.
6. Promulgation of interstate quarantine regulations.
7. Enforcement of quarantine regulations.
8. Relations of the national quarantine system to State and local quarantines.
9. Prevalence of cholera, yellow fever, smallpox, plague, and leprosy, and special efforts of the Service to prevent the introduction or spread of the same.

In general, it may be said that, while cholera had materially diminished in foreign countries, it was nevertheless deemed necessary to maintain an officer in Europe, who visited various ports and places for the purpose of keeping the Bureau accurately informed.

Unusual precautions were taken to prevent the introduction of yellow fever and to prevent the spread of smallpox, the details of which will be found under appropriate headings.

Sanitary inspections were maintained in certain foreign ports, and a systematic inspection of all the local quarantines of the United States was inaugurated and successfully conducted; the national quarantine stations were successfully operated, and an unusually large number of cases of yellow fever were caught and held at these sanitary outposts; sanitary reports were transmitted weekly to health officers at home and abroad; the maritime quarantine regulations, both for foreign and domestic ports, were revised, materially improved, and made less onerous to commerce without loss of efficiency; interstate quarantine regulations, under the act of Congress of February 15, 1893, were prepared and promulgated; and finally the Hygienic Laboratory was utilized for determining at critical periods the infectious or innocent character of suspected cases, and in the scientific investigation into the causes and prevention of disease.

HYGIENIC LABORATORY.

Following is the report of the medical officer in charge of the Hygienic Laboratory of the Marine-Hospital Service for the fiscal year 1894. It is proposed to detail from time to time officers of the Service to assist in laboratory work and for their instruction in bacteriological diagnosis of contagious diseases and scientific investigation of their causes and means of prevention. Passed Assistant Surgeon Kinyoun at the present writing is abroad under orders. After completion of his service as delegate to the International Congress of Hygiene and Demography at Budapest he will visit the various laboratories in Italy, Germany, and France to familiarize himself with the latest advances in serum therapy. This officer has transmitted to the Bureau a supply of diphtheria toxin from the Pasteur laboratory in Paris, with which animal immunization has already been begun, a horse having been purchased by the Bureau for the purpose of obtaining an antitoxic serum for the cure and prevention of diphtheria. On his return it is expected that the methods of preparing the toxin and obtaining the diphtheria antitoxin from the immunized animal will be demonstrated to State health officers and others in order that the benefits of this new remedy for diphtheria may be as widely distributed as possible.

TREASURY DEPARTMENT,
MARINE-HOSPITAL SERVICE, HYGIENIC LABORATORY,
Washington, D. C., August 13, 1894.

SIR: I have the honor to submit a short report on the operations of the laboratory for the past year, ending June 30, 1894.

On account of duties devolving upon me in connection with the exhibits of the Marine-Hospital Service at the World's Columbian Exposition, the quarantine service, and the preparation of plans for improved disinfecting apparatus, there was some intermission in the work of the laboratory during the summer of 1893; notwithstanding, considerable has been accomplished.

In 1893 several specimens which were from suspected cases of cholera were examined to determine their true character. They were specimens from cases on the steamship *Karamania*, the steamship *Russia*, a vessel from Poti, and from the suspected case in Jersey City. The results of these examinations showed conclusively that the cases on the *Karamania*, the *Russia*, and the case in Jersey City were genuine Asiatic cholera; the case on the vessel from Poti was one of acute dysentery.

An examination was also made during this time of a specimen from a case of supposed yellow fever in Pensacola, a report of which has been published. Bacteriological analyses by request of different health officers, have been made from time to time of samples of water from suspected sources, with a view to determining whether the water has been contaminated with sewage or fecal bacteria.

During the winter, at the request of the chairman of the Committee on Ventilation and Acoustics, Hon. G. W. Shell, an examination was made of the ventilation of the Hall of Representatives. A full report was rendered thereon and printed in the proceedings of Congress, vide House Report No. 853, Fifty-third Congress, second session.

Bacteriological examinations have been conducted for the health department of the District of Columbia throughout the past year. The majority of these pertain to the condition of the water of wells located in the city limits. About 90 per cent of all examined were found contaminated with sewage.

A systematic course of instruction in bacteriology was instituted during the winter. Four officers of the Service, under orders from yourself, have availed themselves of the course.

In addition to the above work investigations have been made and are now being continued concerning the etiology and pathology of the eruptive fevers and in preventive inoculations against the acute infectious diseases. A separate report upon these latter will be made in the near future.

Respectfully, yours,
J. J. KINYOUN,
Passed Assistant Surgeon, Marine-Hospital Service.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

REPORT ON THE AIR OF THE HOUSE OF REPRESENTATIVES.

TREASURY DEPARTMENT,
OFFICE OF THE SUPERVISING SURGEON-GENERAL,
MARINE-HOSPITAL SERVICE,
Washington, D. C., April 14, 1894.

SIR: Agreeably to your request for a further report on the ventilation of the House of Representatives, and that an examination should be made of the air for impurities deleterious to health, I have the honor to submit the following for your consideration:

In a preliminary report made to you on April 16, by Mr. H. Adams, of the Supervising Architect's Office, and myself, certain data concerning the analysis of the air were inclosed. Some parts of these are incorporated in this report.

For the purpose of determining whether there was an appreciable difference between the air of the Hall and that of outside, inspections were made of the several parts of the building at irregular times and intervals, and it was apparent from the commencement that there was a decided difference in the air as soon as it entered the Hall. This condition varied considerably at times in degree. Chemical analyses were also made from time to time to determine the nature and quantity of these additions to the air. Qualitative tests revealed that the principal impurities were carbon dioxide, illuminating gas, ammonia, and organic matter in suspension, and other substances not classified. As carbon dioxide is considered as the index for impurities present in the atmosphere of living rooms, analyses were instituted to determine the quantity in a given volume of air.

The air in passing through the air duct to the Hall gains a slight amount of carbon dioxide—about 1 part per 10,000—so small in amount that it is hardly worth considering. The amount of carbon dioxide present in the Hall of Representatives was never found to be in large quantities, but was variable, and never in proportion to the odors usually present.

The following table, setting forth the amounts of carbon dioxide per 10,000 parts, will perhaps give a better idea:

Date.	CO_2.		Remarks.
	Air outside.	Main Hall.	
February 18	....	7.50	Sunday, Hall closed, ventilating machinery stopped.
February 24	3.35	5.40	House in session, 300 persons present 2 p. m.
March 6	3.93	4.20	House in session, 400 persons present 3 p. m.
March 9	....	5.34	House in session, 200 persons present 2 p. m.
March 12	4.03	7.00	House in session, 400 persons present 4 p. m.
March 14	4.205	4.24	House in session, 200 persons present 3 p. m.
March 23	....	11.394	House in session, 800 persons present 2 p. m.
March 29	....	3.54	House in session, 500 persons present 12.30 p. m.
March 31	....	11.01	Sunday, Hall closed 11.30 a. m.

It would appear from the above table that the carbon dioxide increases in a ratio with the number of persons present and the length of time occupied. When the ventilating machinery is stopped and the building closed the amount is increased. The amount of carbon dioxide was, as a rule, increased over the amount found on the floor, the largest quantity being 5.76 parts per 10,000 and the lowest 2.33 parts. Samples of air taken from the exit over the ceiling of the Hall at the same time as those from the floor of the Hall give the following:

Date.	CO_2 (parts per 10,000).
February 18	5.76
March 9	5.54
March 12	5.36
March 23	5.65
March 29	2.33

The percentage of carbon dioxide was found to be present in larger quantities in the cellar than in the other parts of the building, although not in amount which one would suppose from the strong, pungent, disagreeable odors which are always present. The largest amount was 15.39 parts per 10,000 and the lowest 4.65 parts per 10,000. The amount of carbon dioxide in the cellar varied considerably, according to the direction of the wind. If from the north and west, there was very little present in the different parts, save the northeast portion near the elevator shaft. This increase of carbon dioxide can be explained by the fact that the outside currents, passing in through the west and northwest sides, tend to concentrate the impure air in this particular locality.

The origin of the carbon dioxide is not from persons, but arises from one or all of the following sources: From the boiler room, from the decomposing matters in the several parts of the cellar and terrace rooms, where large quantities of stationery, etc., are stored, and from the kitchen. The corridors of the basement contain carbon dioxide in considerable quantities, especially at two or three places—over the main stairways, from the elevator shaft on the east side, and from the small stairway on the west side. The cellar air at these places is drawn up to the basement, where it partly diffuses through the basement windows, and ascends to other parts of the building.

Samples of air taken from over the west main stairway gave 15.39 parts of carbon dioxide per 10,000, while at the east stairway only 4 parts were found.

This condition is partly explained by reason of the fact that the ventilation of the corridors is accomplished by means of fans, which aspirate the air from the corridors, and the louvers are directly over the stairways.

On the west side of the Hall, in the basement, is a small stairway communicating with the cellar. There is no way provided for closing this entrance to the cellar, and here at all times there is a strong current of air passing into the basement corridors from the cellar, which, in the main, passes upward to the other parts of the building by the main stairway elevator shaft.

The amount of carbon dioxide found in the Speaker's lobby was variable, depending largely on the number of persons occupying it and the length of time the persons were smoking. The highest percentage was 11.10 per 10,000 and the lowest 4.025 parts per 10,000.

The cellar air finds its way into this part of the Hall also, and comes principally through stairways connecting the lobby with the basement.

The system by which the lobby is ventilated is by means of registers, which are for superheating the air. The ventilation of this part is poor; especially is this so in winter.

AMMONIA.

The quantity of ammonia in the different parts of the building shows a decided increase over the amount in the outside air, showing about the same ratio as that of the carbon dioxide. The following observations will show the amount of this substance (approximately) found in the air:

Date	Per cubic meter.		
	Outside air.	In Hall.	In basement.
	Millig.	*Millig.*	*Millig.*
March 6	0.0150	0.01522	....
March 9	.0152	.0160	....
March 14	.0150	.0200	0.0300
March 29	.0150	.0200	.0885

It appears that the greatest amount comes from the cellar air, a part of which contaminates the air of the basement, and, remotely, the atmosphere of the Hall.

The ammonia in the Hall represents at least three sources of origin: From the respiration, from the cellar and basement, and from the decomposing substances on the floor and gratings, especially from the latter, because the air is made to filter through the filth before it gains entrance into the Hall.

ILLUMINATING GAS.

Small quantities of illuminating gas have been found present in the several parts of the building, at times existing only as a trace, at other times in quantities appreciable to the senses. Especially was this so when the building had been closed for a considerable time and no artificial ventilation carried on. Illuminating gas was detected in the Hall of the House while that body was in session, but it existed only in minute quantities. Whether it had its origin from a leaky burner in the cloak rooms or from the gas fixtures above the ceiling could not be definitely determined, but the inference was that it came from the latter. On February 18 (Sunday) samples of air were collected in the Hall for analysis. One taken near the ceiling contained one part per 1,000 of illuminating gas, and that taken from the floor about one-half part per 1,000. On March 25 the experiment was repeated under the same conditions, and gave 1.75 parts per 1,000 near the ceiling and 0.75 part on the floor, showing conclusively that the gas came from over the ceiling.

There are leaky gas pipes in other parts of the building, especially in the cellar. In one instance 0.7 part per 1,000 was detected, the quantity of gas present depending upon how long the building had been closed and the ventilating machinery stopped.

In addition to the gaseous impurities present and already referred to there are others which no attempt has been made to classify. These are the nauseating, musty odors existing in the cellar air. These are held in suspension by the atmosphere, and are drawn upward by the air currents to other portions of the building.

The cellar air in the rooms of the terrace is the worst contaminated. The impurities are derived from the vast quantities of tools, stationery, rubbish, wood, etc., with which these rooms are filled. On account of the dampness these materials are undergoing decomposition to a greater or lesser degree, and furnish the bulk of the contamination. This condition is augmented by the odors coming from the kitchen. These latter, which in themselves may not be a menace to health, are anything but pleasant to experience.

Samples of air collected at various places in the cellar demonstrate that the impurities were in great part organic matter in suspension, on account of the air yielding a large quantity of "albuminoid ammonia."

The condition of the atmosphere in these parts is not in any way improved by the location of the water-closets and bathroom in the southeast corner. The ventilation of these is defective, depending to a great extent upon the elevator shaft and small stairway. This impure air, coming from the cellar, naturally finds an exit through the stairways and elevator shafts to the corridors of the basement and Hall. A part of this escapes by the ventilating apparatus over each of the main stairways, and some finds its way into the Hall through the many openings. To what extent the air from this source passes into the Hall has not been definitely determined, but it is considerable, and adds not a little to the impurities in the atmosphere.

The Hall proper is ventilated by a system which, in theory, should supply a sufficient quantity of fresh air to the Hall. The method of introducing the air in the floor is exceedingly faulty, and is open to serious objections.

The organic matter which accumulates on the floor is in great part brought in direct contact with the air current as it enters the Hall.

The gratings through which the air enters are so located and constructed that they become ideal dirt traps. Further, on account of the size and form of the openwork in the gratings, it is almost an impossibility to keep them clean. The dirt also falls through the gratings to the space beneath the floor, where it is subjected to the same influences as if on the gratings.

The dirt, etc., which accumulates on the floor is of a complex nature, both as to the materials which compose it and the odors which it evolves. The sweepings collected from time to time have shown on examination a little of everything—dirt from the street, dust, tobacco, food, fruit, nuts, paper, expectoration, and bacteria.

This filth is subjected to the air current, which acts as a distilling process, setting free the complex odors, also holding it in suspension and carrying it up in to the Hall.

This condition of affairs constantly exists, but is worse at times than others, especially when the gratings are not kept clean, or when the dirt and filth under the floor is allowed to remain for some time.

What is said of the gratings can also be applied to the carpet. This is not in the best condition. In some places it is saturated with tobacco expectoration, a condition which tends to make it none the less odorous.

The same conditions exist in the galleries, although to a lesser degree than on the floor of the Hall, except in the gallery opposite the Speaker's desk, where it is worse, odors of tobacco, etc., being always prominent. When the galleries are filled—the main gallery particularly—the odors above referred to are augmented by others, emanating from those persons who are never in the state next to godliness—the vagabonds who congregate in this gallery during the winter months for the sole purpose of keeping warm. This is an important factor in contaminating the air on the floor. The effluvium from this source, a part of it at least, is carried down toward the floor by currents of air from the corridors, entering the doors of the gallery.

The air is further vitiated by persons smoking. The contamination of the air of the Hall from this source is apparent to all.

In the foregoing an attempt is made to show how much the air in the several parts of the building deviates from the normal, and to point out the most prominent factors of the change.

While the amount of carbon dioxide has never, save in a few instances, been found to be in excess of the admissible quantity, there are other impurities in addition to that of carbon dioxide which may be deleterious to health. Illuminating gas at times is present in large quantities. Free ammonia and nitrogenous matters are in excess of the quantities normally present in the atmosphere of a well-ventilated room.

How to remedy these defects in the system of ventilation of the Hall is a serious question to decide, and it becomes more so when all the facts relating thereto are taken into consideration.

There are three separate systems of ventilation of the building: (1) For the Hall; (2) for the basement, Speaker's lobby, and corridors, and (3) for the cellar and terrace.

The ventilation of the Hall differs from the others in many particulars. These will not be considered in detail, because they will be discussed thoroughly by Mr. Henry

Adams. The objection which can be urged against this system is the fact of the air being already more or less contaminated by the dirt, etc., of the floor.

In the basement, the Speaker's lobby, and corridors there is an indirect system of heating and ventilating. This is open to serious objection on account of the undue heating of the air during winter, and if the requisite amount of air be supplied the heat is intolerable. In summer the air current is concentrated and is unpleasant.

The cellar ventilation is exceedingly poor. It appears that it was the intention to have the foul air from this locality drawn out by the draft of the furnace flues, but practically a very small proportion is disposed of in this way. In the corridors of the cellar run the numerous steam and hot-water pipes, which tend to heat the air, and it, being thus heated, seeks a higher level. This will in part account for the strong currents of air encountered at the communications between the cellar and basement, etc.

In the terrace rooms on the south side are two wing fans. These are for the purpose of keeping the air circulating among the large quantity of books and stationery, to prevent the formation of mold, etc. While they doubtless serve this purpose, in the prevention of mold, they are the cause of the contamination of the air of the cellar, because the air set in motion by them is surcharged with organic matter, arising from books, paper, rubbish and wood, etc., which is further diffused to all parts of the building. It can be readily seen that this is no small matter.

The ventilation provided for the kitchen is ample, and if the proper measures are carried out there should be no cause for complaint concerning the odors emanating therefrom.

To meet these defects in the ventilation so far as possible, until a better system can be devised, a few suggestions might not be amiss:

(1) The cellar air should be prevented from gaining access to the basement. This can be done without entailing a great expense.

(2) The water-closets and bathrooms should have an independent ventilation.

(3) The building should be properly policed in all its parts. This is not done as it should be; especially is this so in the Hall.

The gratings in the floor are not kept clean; only those that are prominently visible. Dirt and filth should be promptly removed from the floor and under the floor. A sanitary inspection should be made of all parts of the building, and always kept clean.

Any change looking to the betterment of the ventilation of the Hall must take all other parts of the building into consideration. Adequate facilities for a supply of fresh air should be made for the cellar as for the Hall. To do this it may not be necessary to supply the same number of cubic feet to all parts, but enough should be supplied to remove the impurities as fast as they arise.

The ventilation of the Hall can be improved over the system in vogue at the commencement of this examination by allowing the building to be supplied with fresh air during the nights. It has been suggested that the ventilating machinery be run continuously, especially during the cold weather, when all the parts of the building are kept closed.

The system of lighting the Hall is open to a serious objection—the escape of gas from the numerous gas jets over the ceiling. The electric-light plant should be enlarged sufficiently to supply all parts of the building with electric lighting. This alone will add much to the sanitary condition of the several portions of the building.

No suggestions of any consequence have been made in this report looking to any radical change in the existing plant. This will be thoroughly considered by Mr. Henry Adams, heating and ventilating engineer, of the Supervising Architect's Office.

Respectfully submitted.

J. J. KINYOUN,
Passed Assistant Surgeon, Marine-Hospital Service.

Hon. G. W. SHELL,
Chairman Committee on Ventilation, House of Representatives.
(Through the Surgeon-General of the Marine-Hospital Service.)

DIVISION OF SANITARY REPORTS AND STATISTICS.

A medical officer is in charge of this division of the Bureau, and each week an edition of 1,800 abstracts of sanitary reports has been issued and transmitted to all quarantine officers of the United States, to State and local boards of health, collectors of customs, and to consular officers abroad. These abstracts at the end of the calendar year are bound, making a volume of about 1,300 octavo pages. The first part of each abstract is devoted to information relative to the United States, containing special reports upon the presence of epidemic disease or upon the sanitary condition of ports and places, reports received from the various quarantine stations and from the several ports where immigrants arrive, showing the name of the vessel, date of arrival, port of departure, the number of immigrants aboard, and the number of said immigrants coming from suspected or infected localities. Condensed tables are included showing the prevalence of smallpox or any other epidemic disease throughout the United States. Also special yearly and monthly reports of States and cities; a weekly statistical mortality table of 120 cities of the United States, and a weekly table of temperature and rainfall for said cities received from the Department of Agriculture.

Following is a comparative mortality table of certain cities of the United States for the year ended December 31, 1893, compiled in the division of sanitary reports and statistics from reports received at the Bureau:

MORTALITY TABLE, CITIES OF THE UNITED STATES, 1893.

Cities.	Population. United States census 1890.	Total deaths from all causes.	Annual rate per 1,000 of the population.	Cities.	Population, United States census, 1890.	Total deaths from all causes.	Annual rate per 1,000 of the population.
Altoona, Pa	30,337	682	22.5	Nashville, Tenn	76,168	1,535	20.2
Auburn, N. Y	25,858	521	20.1	Newark, N. J	181,830	4,880	26.8
Baltimore, Md	434,439	6,821	15.7	New Orleans, La	242.039	6,989	28.9
Binghamton, N. Y	35,005	622	17.8	New York, N. Y	1,515,301	44,497	29.4
Boston, Mass	448,477	11,640	25.9	Northampton, Mass	14,990	302	20.1
Brooklyn, N.Y	806,343	20,924	25.9	Omaha, Nebr	140,452	2,203	15.6
Chicago, Ill	1,099,850	27,156	24.7	Pensacola, Fla	11,750	242	20.6
Cincinnati, Ohio	296,908	5,887	19.8	Philadelphia, Pa	1,046,964	23,694	22.6
Cleveland, Ohio	261,353	5,240	20	Portland, Me	36,425	722	19.8
Detroit, Mich	205,876	4,123	20	Providence, R. I	132,146	3,246	24.6
Dubuque, Iowa	30,311	426	14.1	Richmond, Va	81,388	2,064	25.4
Erie, Pa	40,634	710	17.4	Rochester, N. Y	133,896	2,588	19.3
Fall River, Mass	74 398	1,738	23.4	Sacramento, Cal	26,386	438	16.6
Galveston, Tex	29,084	604	20.8	San Diego, Cal	16,159	157	9.7
Indianapolis, Ind	105,436	2,108	19.9	San Francisco, Cal	298,997	5,942	19.9
Keokuk, Iowa	14,101	222	15.8	Toledo, Ohio	81,434	1,466	18
Los Angeles, Cal	50,395	995	19.7	Washington, D. C	230,392	6,131	26.6
Milwaukee, Wis	204,468	4,327	21.2	Williamsport, Pa	27,132	341	12.6
Minneapolis, Minn	164,738	2,223	13.5	Winona, Minn	18,208	262	14.4
Mobile, Ala	31,076	823	26.5				

The second part of the abstract is devoted to foreign news of a sanitary character, including a condensed table showing the presence of cholera and yellow fever throughout the world as reported to the Bureau; special reports from consuls, medical officers, and sanitary inspectors, arranged according to countries; statistical tables, and a weekly mortality table of about 120 cities.

SANITARY INSPECTION SERVICE.

As previously stated, the regular officers of the Marine-Hospital Service, eleven in number, detailed by the President to serve in the offices of the consuls in foreign ports during the cholera season of 1893, were recalled November 30, with the exception of one surgeon.

The services of sixteen sanitary inspectors, temporarily appointed in foreign ports during the same season to assist the medical officers, were also discontinued by November 30.

In general it may be stated that it was deemed unnecessary during the past year to maintain medical officers in the offices of consuls at foreign ports. The presence of these officers in the year previous had given the proper impulse to the sanitary work necessary, and it was believed that the consuls themselves were able to enforce the provisions which are required, as set forth in the bill of health which they are obliged to sign. Surg. Fairfax Irwin, however, was kept abroad, as has been previously stated, and transmitted accurate information both with regard to the prevalence of cholera and other diseases and any additional necessary precautions to be taken. The reports, made weekly, were published in the abstract. His itinerary was as follows:

On January 15, 1894, being then on duty in London, Surgeon Irwin was ordered to proceed to St. Petersburg, for the purpose of observing the progress of the cholera epidemic in the Empire and furnishing early information to the Government as to its spread. En route he was in Vienna from the 18th to the 23d of January, for the purpose of consulting with the consul-general as to cholera in Galicia. He arrived in St. Petersburg on the 26th of the same month. Having been ordered to Paris in connection with the meeting of the International Sanitary Conference, Surgeon Irwin arrived in that city on March 4, where he remained until April 25.

April 26 he was transferred to Vienna, owing to the threatening aspect of the epidemic of cholera in Galicia.

On May 7 he proceeded to Budapest for further information, and from there, on the 13th, was ordered to Berlin, at which point it was found that general information as to the spread of the epidemic was more easily obtainable than elsewhere. This officer remained in Berlin until August 2, and was then ordered to Rotterdam owing to certain reports which had been made as to the inefficacy of examination of emigrants at that port.

From Rotterdam he returned to Brussels in order to obtain information as to the progress of cholera in Liege and the towns along the Meuse.

On August 12 Surgeon Irwin arrived in England, having been ordered to inspect the various ports of Great Britain with a view to obtaining information as to the methods pursued by the steamship companies as to the examination of emigrants and the disinfection of luggage. For this purpose he was in Southampton August 13; Hull, August 15; Liverpool, August 16 to 19; Glasgow, August 20 to 27; Queenstown, August 29 to 30, and returned to London September 1. He was ordered to return to the United States, and arrived in this country November 3.

Sanitary inspectors were maintained throughout the year in the Cuban ports of Havana, Cienfuegos, and Santiago; also in Rio de Janeiro, on the Isthmus of Panama, and at Yokohama.

In the United States temporary sanitary inspectors, nine in number, were employed at Chicago during the prevalence of smallpox for the inspection of outgoing vessels and vaccination of the crews, and two for the same purpose at Detroit, Mich. Inspectors were also stationed at El Paso and Eagle Pass, Tex., and Nogales, Ariz., to inspect trains from Mexico on account of smallpox and yellow fever. Under this head, also, may be properly mentioned the division of the Atlantic, Gulf, and Pacific coasts into ten districts, in each of which a regular medical officer of the Marine-Hospital Service was detailed to inspect, periodically, every quarantine station and port of entry.

In May, a sanitary inspector, an expert in the diagnosis of yellow fever, was appointed to visit the different seaport cities of the Southern States, with a view to studying the diseases which usually give rise to questions of diagnosis in the beginning of epidemics, in order that the Bureau might be promptly informed of any suspected outbreak of the disease. A careful examination of the mortuary records of the cities of Baltimore, Norfolk, Wilmington, Charleston, Savannah, Jacksonville, Key West, Tampa, and Mobile was made, and in none of them was there found any suspicion of the existence of yellow fever, a conclusion that was verified by the freedom from this disease during the ensuing season. This inspection was deemed necessary because of the epidemic of yellow fever in Brunswick, Ga., the previous year. A full description of the method employed will be found in a subjoined article on the prevention of the spread of yellow fever.

NATIONAL QUARANTINE STATIONS.

Following are the reports in detail of the operations of the national quarantine stations, arranged according to location, from the most northern station on the Atlantic Coast to the most northern on the Pacific, enumerated as follows: Camp Low Quarantine, Sandy Hook, New Jersey; Delaware Breakwater Quarantine, near Cape Henlopen, at the entrance of Delaware Bay; Reedy Island Quarantine, near Port Penn, Del., and about 45 miles from Philadelphia, and 50 miles from the mouth of the bay; Cape Charles Quarantine, the boarding station near Old Point Comfort, Va.; detention barracks, hospitals, and disinfecting plant on Fishermans Island, off Cape Charles, Virginia; South Atlantic Quarantine, Blackbeard Island, Sapelo Sound, Georgia; Brunswick Quarantine, Brunswick, Ga.; Key West Quarantine, Dry Tortugas, Florida; Gulf Quarantine, Ship Island, Mississippi; San Diego Quarantine, San Diego, Cal.; San Francisco Quarantine, Angel Island, San Francisco Bay, California; Port Townsend Quarantine, boarding station at Port Townsend, barracks, hospital, disinfecting plant at Diamond Point, Washington.

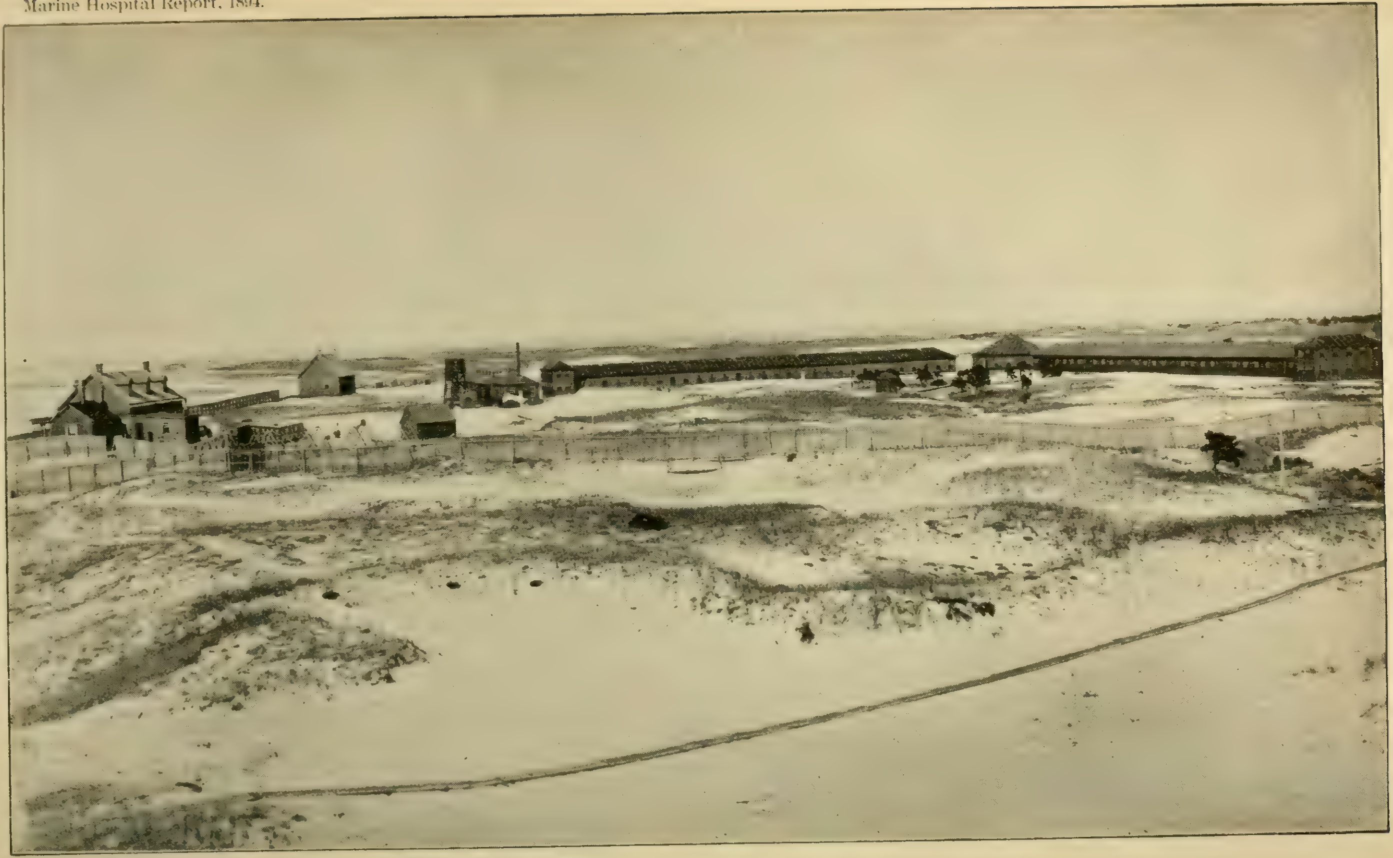
CAMP LOW QUARANTINE, SANDY HOOK, NEW JERSEY.

The operations of the quarantine service at Camp Low during the fiscal year ended June 30, 1894, were confined to the care and preservation of the buildings and contents. A steward and four attendants to guard the valuable property owned by the Service have been on constant duty. A naphtha launch has been provided for the purpose of conveying supplies; all the machinery has been well oiled and painted, including the engines, boilers, steam disinfectors, laundry, and electric plant, and all other property carefully guarded.

For a full description of this quarantine establishment and the circumstances under which it was created reference is made to the annual reports of 1892 and 1893. Although no active operations have been carried on, it has been deemed advisable to preserve this station intact and ready for use should demand be made upon it.

DELAWARE BREAKWATER QUARANTINE; POST-OFFICE ADDRESS, LEWES, DEL.

From November 30, 1893, to November 30, 1894, 101 vessels were inspected and passed, and 7 vessels were sent to Reedy Island Quarantine Station.



U. S. QUARANTINE STATION, DELAWARE BREAKWATER, DELAWARE.

On the above infected vessels there had been one death from yellow fever at Rio de Janeiro, and one death from smallpox at sea. Three cases of smallpox were taken off at this quarantine station.

A full description of the station will be found in the annual reports of 1892 and 1893. P. A. Surg. H. D. Geddings was in command from July 1 to September 14, 1893, from which latter date until June 1, 1894, the station was in charge of Acting Asst. Surg. W. P. Orr. P. A. Surg. W. D. Bratton assumed command June 1, 1894, and was relieved on account of physical disability August 27, 1894, by P. A. Surg. C. P. Wertenbaker. The following estimates have been prepared for the ensuing fiscal year:

Naphtha launch for boarding vessels	$4,000
Barracks for cabin passengers	4,000
New boathouse	75
Lavatories to barracks and connecting kitchen sink to sewer	600
Improvement to grounds, grading, planting trees, etc	500
Total	9,175

REPORT OF OPERATIONS OF THE QUARANTINE SERVICE AT THE DELAWARE BREAKWATER STATION DURING THE FISCAL YEAR ENDED JUNE 30, 1894.

By P. A. Surg. W. D. BRATTON, Marine-Hospital Service.

On the 1st day of July, 1893, P. A. Surg. H. D. Geddings assumed command of the station, relieving Acting Asst. Surg. W. P. Orr. He pushed the various works of construction and repair then under way, suggested others, supervised sinking of artesian well, and exerted himself to prepare the station for emergency call. Was in command also of the Reedy Island Station until August 30, when P. A. Surg. A. H. Glennan assumed command of that station and it began independent operations. Dr. Geddings likewise instituted complaints with a view to proceedings against neighboring fish-oil works as nuisances imperiling successful operations at this station. September 14 he was ordered to take charge of the detention camp near Brunswick, Ga., and Acting Assistant Surgeon Orr was left in command.

October 19, disinfecting barge *Zamora* sent to Wilmington, and laid up in winter quarters, under Bureau orders.

October 26, under similar orders, steamer *Pasteur* was sent to Wilmington, Del., for winter quarters, crew discharged, and pilot retained as watchman.

November 8 a severe gale washed away the northeast corner of quarantine inclosure, with part of infectious disease camp, threatening also the pesthouse, and officer in command immediately recommended measures to check further destruction.

November 20 steamer *Foster* ordered by Bureau to Reedy Island. On the 25th further orders were received to inspect during winter months only those vessels having had cases of contagious disease on board during voyage. This continued to be the rule until orders were received in June, 1894, to inspect all vessels calling here for orders.

December 11, 1893, steward was ordered away, and on January 8, 1894, three attendants were discharged.

June 1, 1894, P. A. Surg. W. D. Bratton assumed command of the station. A few days later the Bureau authorized the inspection here of a list of about twenty-five fruit steamers, which might pass the Reedy Island Station at night, en route to Philadelphia. During the year, June 30, 1893, to June 30, 1894, 306 vessels were inspected, 14 were disinfected, and 3 cases of smallpox treated in hospital. The number will be much greater hereafter when all vessels calling for orders shall be inspected. No steamer has been sent to the station since November 20, 1893, and the work of boarding can not properly be done without one.

STATEMENT OF REPAIRS AND ALTERATIONS MADE AT DELAWARE BREAKWATER QUARANTINE STATION DURING FISCAL YEAR ENDED JUNE 30, 1894.

By P. A. Surg. W. D. BRATTON.

A water tower and tank were erected; bath house and laundry and boiler house built and equipped with boiler, pump, etc.; artesian well was sunk 400 feet; pump and water pipes laid to various buildings and barracks; disinfecting chamber installed in boiler room; addition of several rooms built to steward's quarters; flagstaff erected on grounds in place of that on executive building; 300 yards wire netting purchased for windows of the various buildings; sewer pipe from bath house and laundry laid to low water; extension made of hospital sewer to beach, and the same repaired; minor repairs made to hospital and executive building; bath, etc., added to latter; barracks kitchen equipped with ranges, etc.; more plank walks constructed; 12 latrines made.

Barge *Zamora*, blown ashore, was hauled back afloat; there were various repairs to machinery, cooking stoves, and disinfecting chamber in steamer *Pasteur*, and on the steamer *Foster*; a lifeboat was purchased for steamer *Pasteur*; a clinker-built cedar boat for the *Foster*.

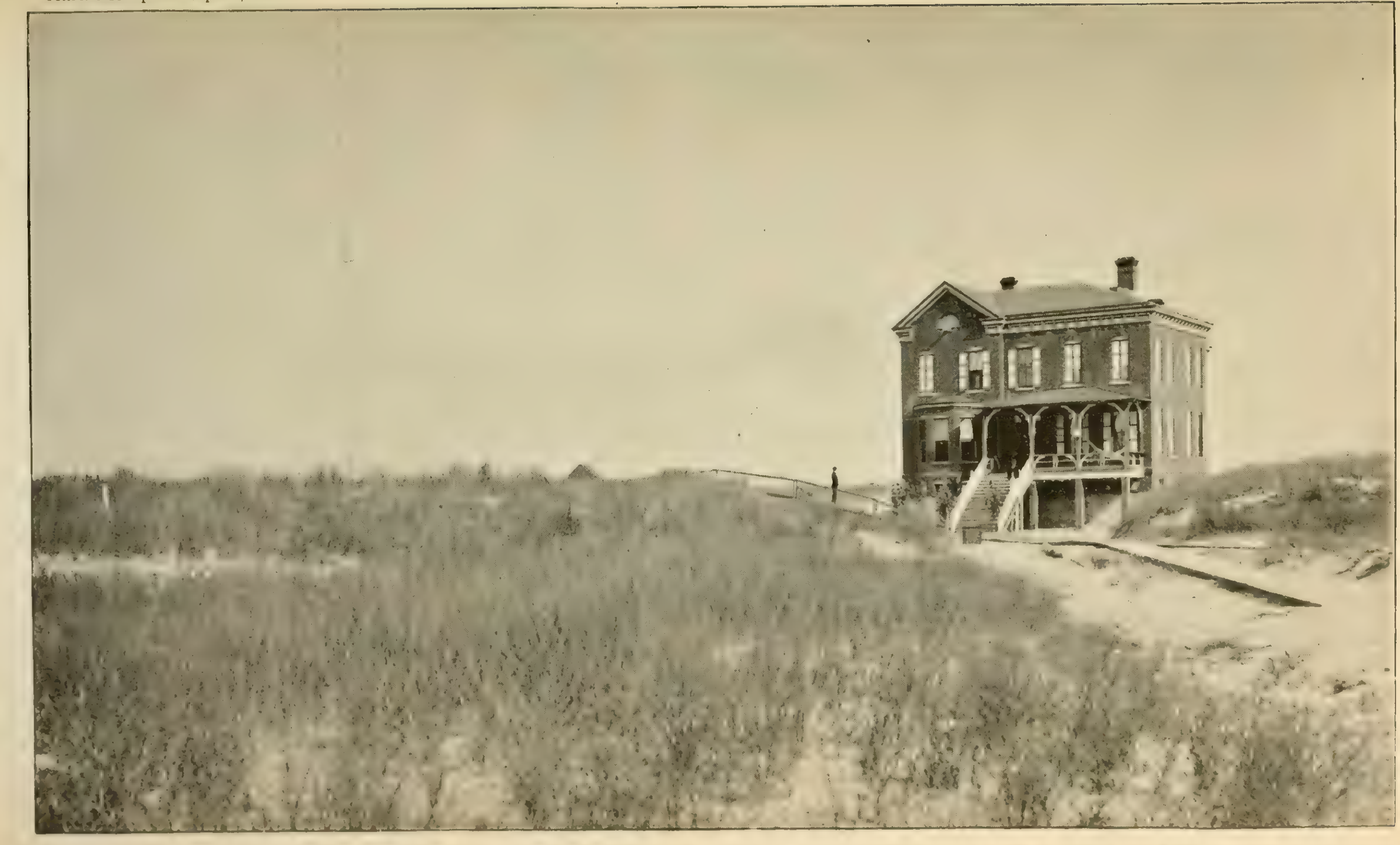
At Reedy Island two disinfecting chambers, purchased under contract, were installed, with boiler, sulphur chambers, etc.; plant complete.

SPECIAL REPORT UPON THE PROTECTION AND PRESERVATION OF THE RESERVATION, DELAWARE BREAKWATER QUARANTINE.

UNITED STATES MARINE-HOSPITAL SERVICE,
DELAWARE BREAKWATER QUARANTINE STATION, DELAWARE,
October 18, 1894.

GENERAL: I have the honor to report that I received yesterday a telegram from the Supervising Architect authorizing the acceptance of the contract of William Virden to put in piling in front of pesthouse. Work will commence in a few days, as soon as the materials can be brought to the station. I wish also to report that with the additional force of three men employed October 1, 1894, a great deal of good work has been done. Aside from getting in over 60 tons of coal and filling every bin on the station to overflowing, the corners of buildings that were being undermined by the wind have been filled in and graveled; necessary repairs to buildings and grounds have been commenced; 32 willow cuttings have been set out, to be followed by cuttings of cottonwood, maple, and poplar. No grass seed is yet procurable, hence nothing can be done in that direction. There is still a vast amount of work to be done here. The sand is piling up against the barracks and blowing in through the cracks. This must be removed and the cracks closed.

It is my purpose to move this sand as fast as possible, and haul gravel to hold it in place, thus putting an end to what has been heretofore an endless task of moving the sand after every storm. If I am given my present force during the winter I guarantee that by the opening of the quarantine season the grounds of this station will be leveled, and graded, and graveled, and will not only present a handsome appearance but will save many hundreds of dollars, caused by labor to keep them in place unless they are graded and graveled. With my present force I can accomplish this at no extra expense. In this connection I may mention that I have been trying the experiment of building light sand breaks of wood across the hollows cut out by the wind and find that they are acting admirably in causing the sand to fill up these hollows, and as soon as they are filled they are graded and graveled. I am also trying to make the wind cut down sand hills and carry them where they are needed.



U. S. QUARANTINE STATION, DELAWARE BREAKWATER, DELAWARE EXECUTIVE BUILDING AND OFFICER'S QUARTERS.

I make these reports in order that the experiment may be tried at some of our reservations, such as Fisherman's Island, where the conditions are similar to the breakwater.

Respectfully, yours,
C. P. WERTENBAKER,
Passed Assistant Surgeon, Marine-Hospital Service, in Command.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

A standing menace to the efficiency of this quarantine station is the large swarms of flies attracted by two fish-oil factories in the vicinity. Efforts have been made to dislodge these factories, which are not only a nuisance by reason of the great stench arising therefrom, both to the citizens of Lewes, Del., 2 miles distant, and to the quarantine station, one-quarter to one-half mile distant, but a source of danger in view of the possibility of flies carrying cholera, should cholera patients be under treatment. An effort was made to dislodge these factories through the Department of Justice, and the United States district attorney at Wilmington, Del., having secured affidavits showing the fish factories a nuisance, attempted to obtain a preliminary injunction in the circuit court of the United States for the district of Delaware against their operations during the summer. This injunction, however, was denied on technical grounds. The Department of Justice is taking further action in the matter.

Following is a portion of the correspondence touching upon this subject:

UNITED STATES MARINE-HOSPITAL SERVICE,
Delaware Breakwater Quarantine Station, Delaware, June 5, 1894.

SIR: I have the honor to submit herewith a few reasons why, in my opinion, it is of grave importance to the successful management of this station that the suit impending to secure an injunction compelling the closure, as a nuisance, of two neighboring factories engaged in the manufacture of fish oil and fertilizer, should be vigorously prosecuted and successfully terminated.

The factories are not now in operation, but will be during the summer. I am not able, therefore, to judge of the intensity and character of the odor, though all who have experienced it pronounce it as vile as it is overpowering. The extent to which the soil in the neighborhood has been saturated with the waste products is, however, indicated by a brownish, oily discoloration to a distance of a quarter of a mile in some directions. It is evident that this is not the sort of ground that ought to abut upon a quarantine reservation. It is evident that odors of the character described are to be considered prejudicial to health, and indirectly conducive to spread of contagious disease by giving rise to, at least, functional disorders of digestion. And it is evident that, as the prevailing winds blow from these factories to the quarantine station, these effects will be thereby intensified and prolonged.

But I wish to show further that, as breeding vast swarms of flies, these factories and their polluted vicinity threaten to impair the usefulness of this station by making it difficult, theoretically impossible, to prevent the spread of an infection, such as that of cholera, from the sick to the well and from the camp to the surrounding country and shipping.

It is known that flies can convey the germs of cholera on their feet, soiled in the dejections of patients, and that for two or three days after feeding upon such dejecta the bacilli may be found in their intestinal canals. The number and pertinacity of the flies already here are incredible, yet I am told they are very much worse later on.

It is already evident to me that no conceivable precautions can prevent vast numbers of the insects from coming in contact with the discharges of even a single cholera patient. From the hospital tent to the barracks dining room will be an easy and natural excursion.

If the probability of such dissemination were confined to the limits of the reservation the nuisance would be sufficiently great. But it is known here that the flies invade the town of Lewes, 2 miles west, and ships at anchor 2 or 3 miles north of the factories. I personally saw on the night of June 3, being called aboard a fishing smack to see a case of sudden paralysis, that the interior of the vessel was black with flies. The wind had blown that day out to sea, and the captain informed me that he was suddenly invaded by these flies, without doubt from the factories mentioned. They swarmed aboard 25 miles from shore.

Respectfully, yours,
W. D. BRATTON,
Passed Assistant Surgeon.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

REEDY ISLAND QUARANTINE—POST-OFFICE ADDRESS, PORT PENN, DEL.

From November 30, 1893, to November 30, 1894, 7 vessels were disinfected, 1,082 were inspected and passed, and 33 were spoken and passed.

A full description of this station may be found in the annual report for 1893.

The following report has been received from the medical officer in command:

REEDY ISLAND QUARANTINE,
Port Penn, Del., September 25, 1894.

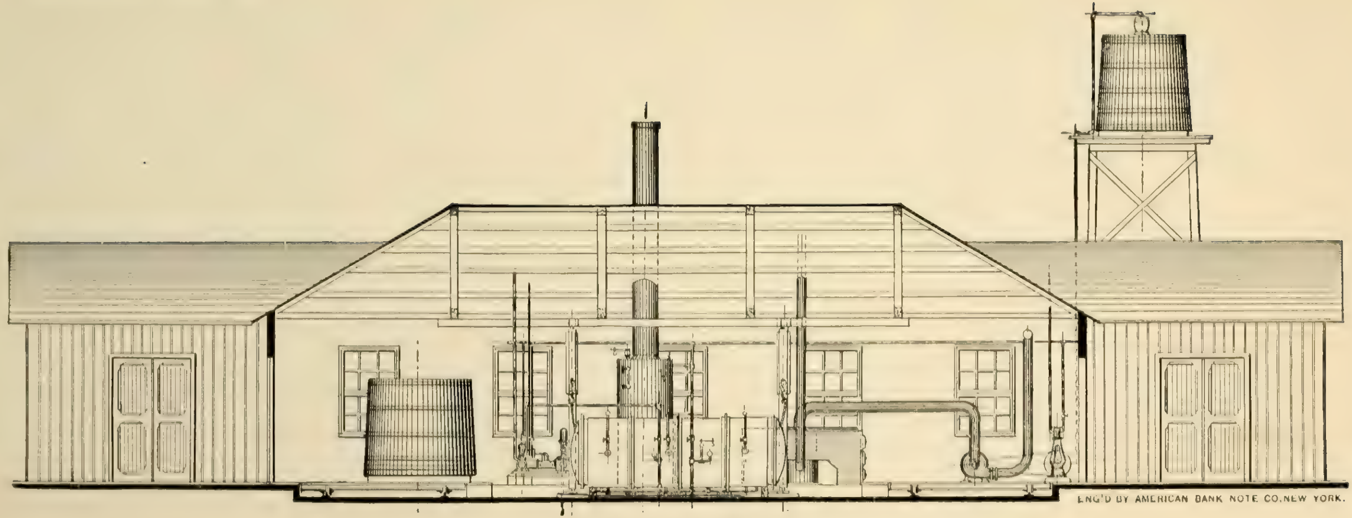
SIR: In accordance with directions to make a report of the operations of the quarantine service at this station during the fiscal year ended June 30, 1894, together with a separate estimate of needed alterations and repairs, I have the honor to submit as follows:

This station was opened for the inspection and disinfection of vessels at the beginning of this fiscal year. The pier is located in the channel of the Delaware River in 30 feet at low water, about 1,500 feet from Reedy Island, and directly opposite Port Penn, on the Delaware shore.

The pier is 400 feet long from points of ice breaks, with disinfecting baggage and warehouse buildings under one roof. The two steam chambers, sulphur furnace, piping, hose, etc., were placed in position by the Kensington Engine Works, and are of fine mechanism and capable of efficient and rapid use.

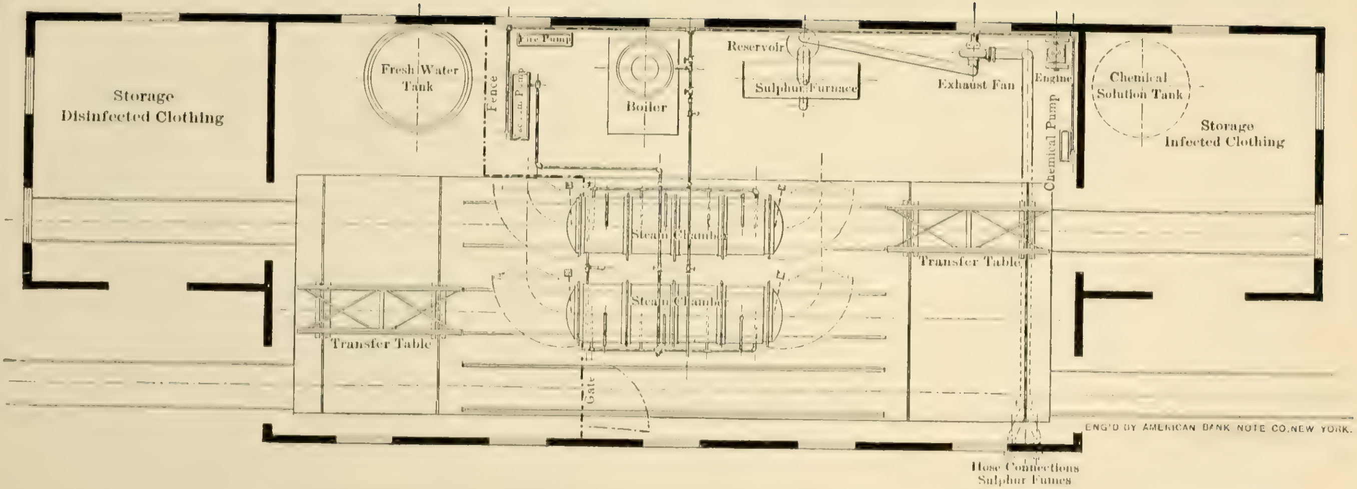
At the south end of the pier an observation tower and fine signal flagstaff were erected in January of this year; also a submarine cable laid thereto from Port Penn, across Reedy Island, the poles and land-wire connections to the main line at Middletown being erected by the Western Union Telegraph Company.

During the year two small rooms were ceiled off in the north end of the rough warehouse building as a protection to the officers and attendants from the inclement weather, and later additional galvanized iron sulphur piping was erected upon brackets along the front length of the building, with suitable hose connections, for more convenience and rapidity in the fumigation of vessels. The ice breaks, consisting of a number of piling driven in a triangular shape at the north and south ends of the pier, and poorly braced, have been badly loosened by strong winds and tides and are in a dangerous condition.



ENG'D BY AMERICAN BANK NOTE CO. NEW YORK.

PLAN OF INSTALLATION, DISINFECTING MACHINERY, REEDY ISLAND QUARANTINE. (VIEW 1.)



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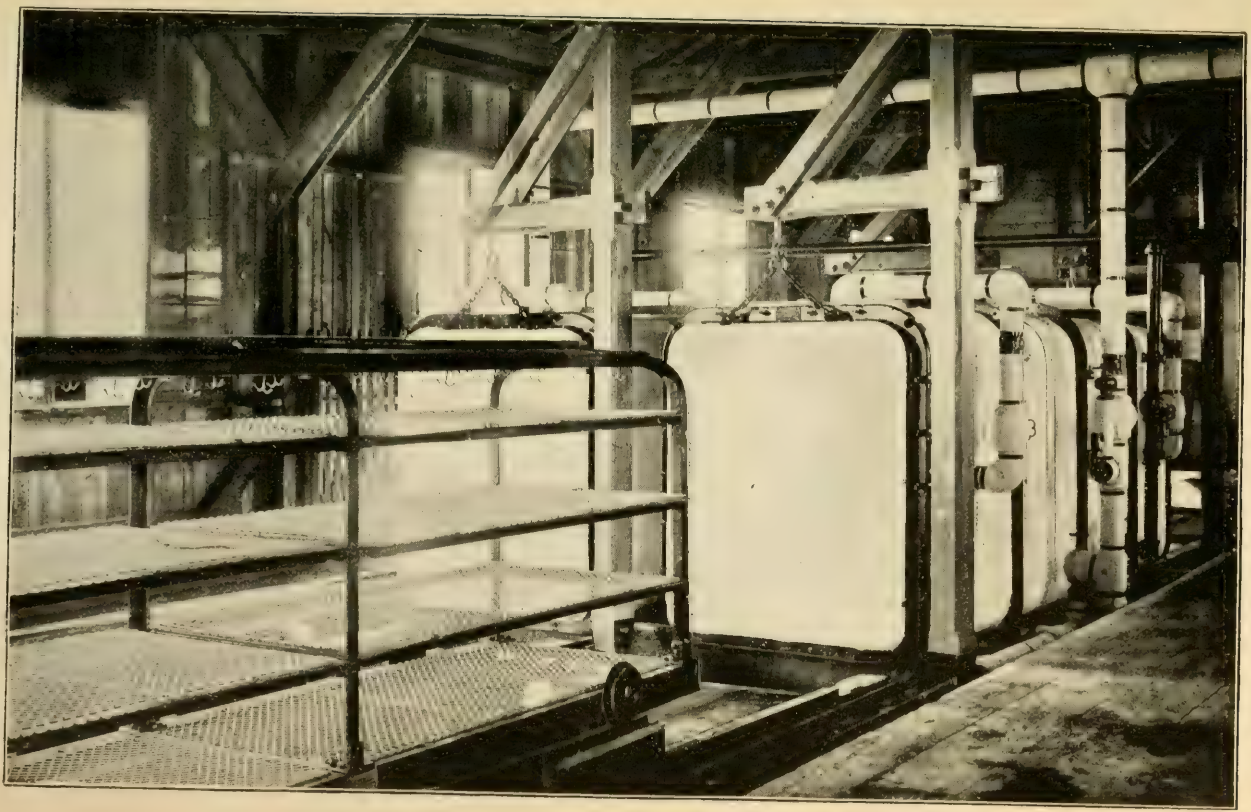
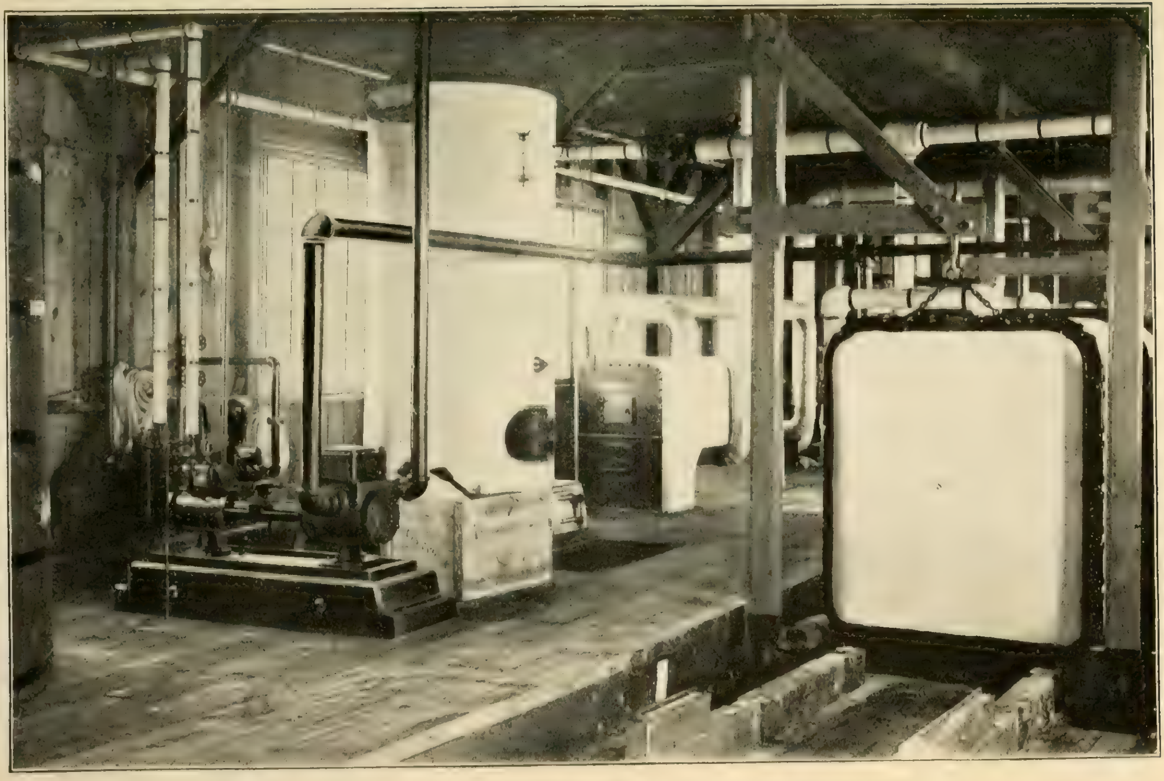
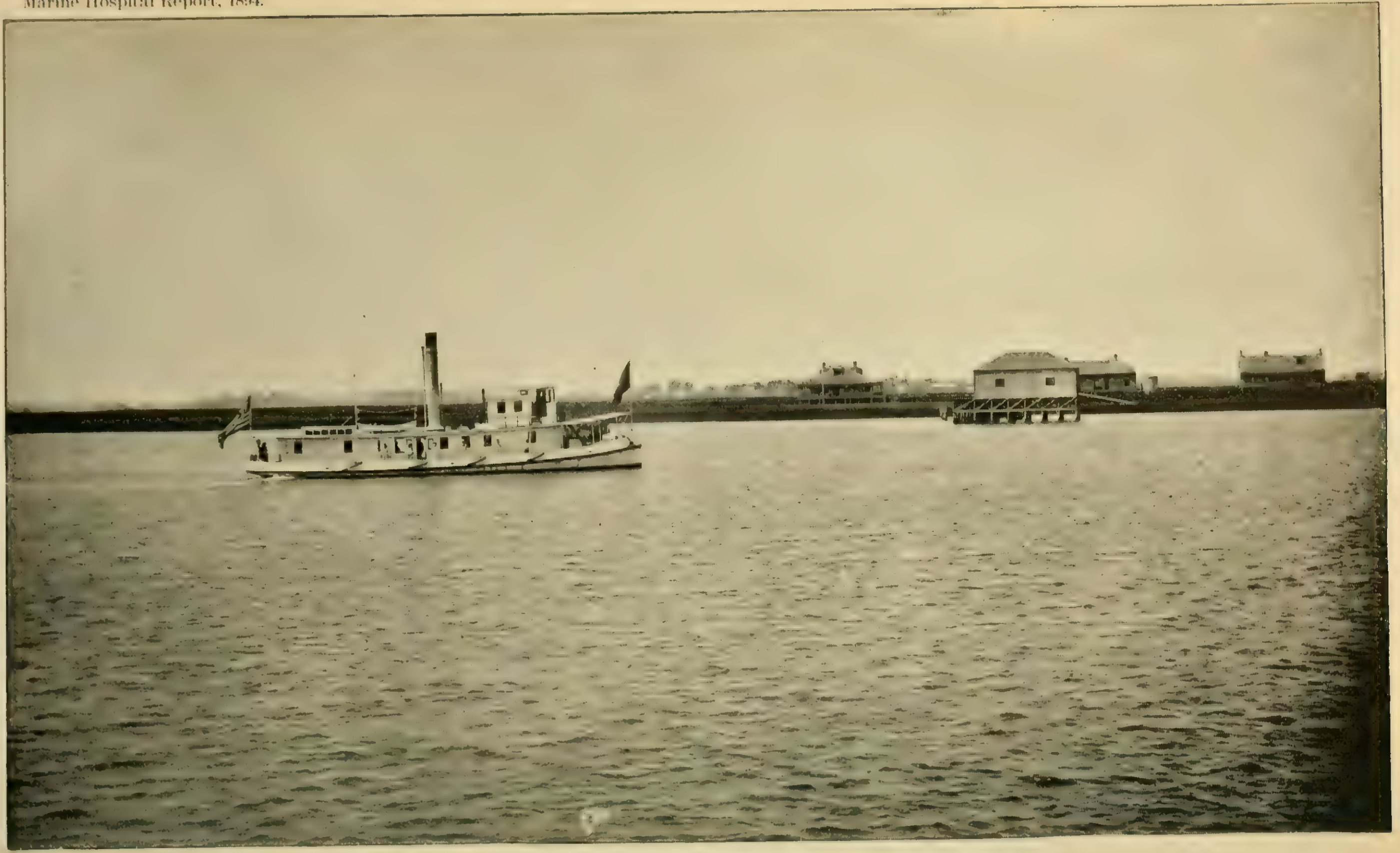
PLAN OF INSTALLATION, DISINFECTING MACHINERY. REEDY ISLAND QUARANTINE. (VIEW 2.)



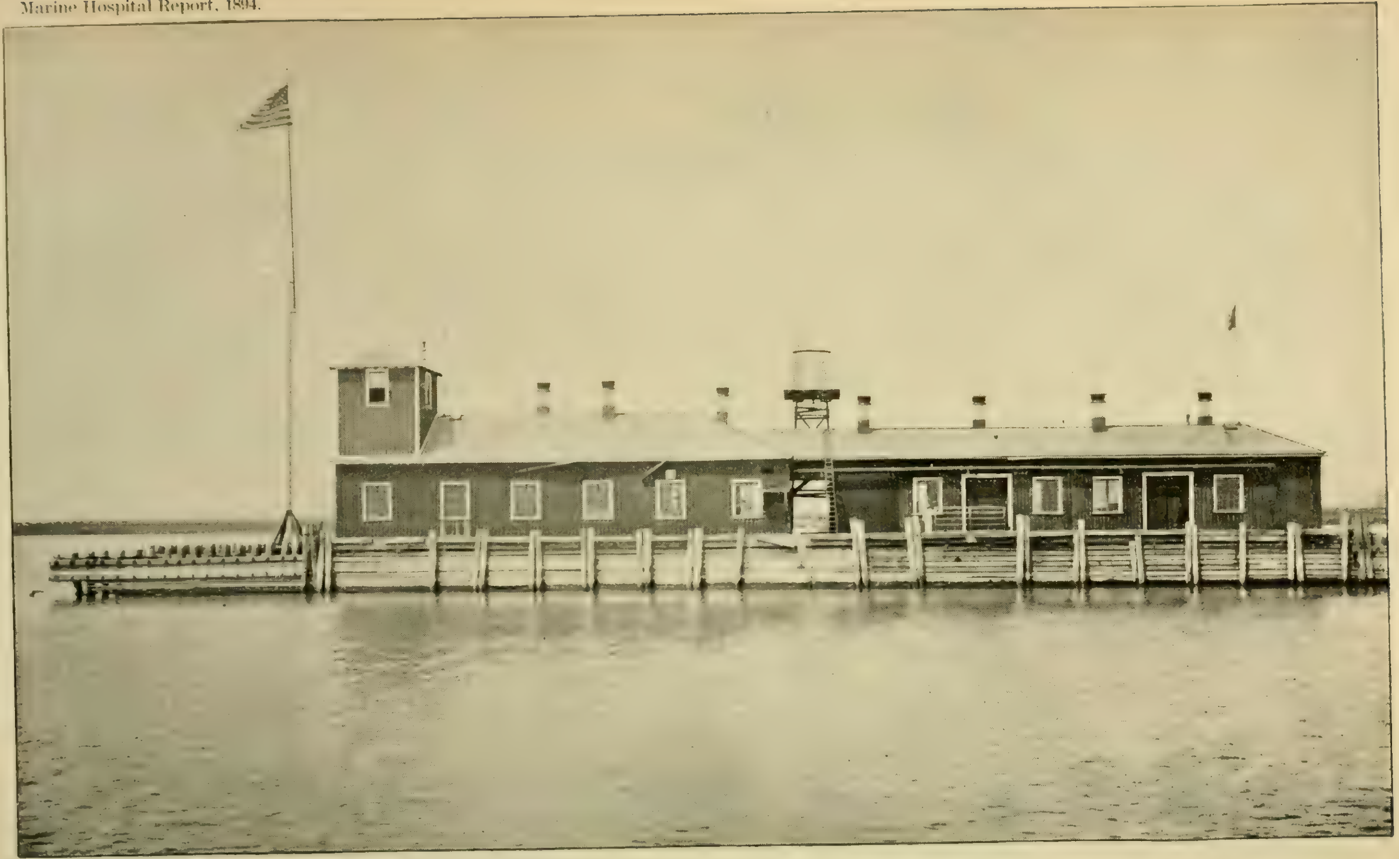
STEAM DISINFECTING CHAMBERS AND CARS, REEDY ISLAND QUARANTINE.



STEAM CHAMBER, SULPHUR FURNACE AND PUMPS, REEDY ISLAND QUARANTINE.



U. S. QUARANTINE STATION, REEDY ISLAND, DELAWARE, SHOWING BOARDING BOAT, BOATHOUSE, QUARTERS, AND HOSPITAL.



U. S. QUARANTINE STATION, REEDY ISLAND, DELAWARE, SHOWING PIER.

In the early spring a board of officers, consisting of Surg. George Purviance, P. A. Surg. A. H. Glennan, and Inspector of Public Buildings John J. Clarke, was convened to consider the advisability of locating the surgeon's house, attendants' quarters, and cottage hospital upon Reedy Island. This was recommended in preference to the situation upon the old ice breaks. The buildings with connecting gangways, boathouse, etc., are now completed, waiting to be furnished for occupancy.

The fumigating steamer *Louis Pasteur* has been converted into an efficient boarding vessel by the removal of the old apparatus and the extension of a cabin aft for the office and living of a boarding officer.

Several severe storms damaged the buildings and pier during the year, notably the hurricane of October, 1893, and, considering the depth of water and strong currents in which the structure is placed, it is a marvel that greater loss was not incurred. On this account a number of heavy piling, not less than 18 inches in diameter and 72 feet in length, should be driven in and around the points of the ice breaks, also suitable fender piles upon the front and inner sides of the pier.

An estimate for this work has been forwarded to the Supervising Architect of the Treasury Department.

The buildings on Reedy Island are placed upon piling 7 feet high, and at high water the island is submerged. To remedy this a temporary embankment and dike about the reservation is being constructed by the attendants, but a steam mud machine should be employed for a short time to grade up the inclosed surface and permanently strengthen the embankment. This can be done at a reasonable expense, and also a quantity of broken stone lightered from the Brandywine or Chester quarries and placed along the front embankment, similar to the work about the lighthouse at the southern end of this island.

A good water supply is imperatively needed, now dependent upon wooden cisterns for rain water, which becomes foul and has already caused diarrhea and sickness upon the station. An artesian well, with a pipe diameter of 3 or 4 inches should be bored upon the island (in preference to the pier for use and safety), with pipe connections to the buildings, and boathouse where the boarding steamer can take on a supply at high water and furnish any vessel in need.

A coal and oil house is required near the present gangway and within reach of a lighter at high water. Also a small, strongly built freight boat, for general use in bad weather.

The largest number of vessels inspected at this station in one day was 13; in one month, 138; and the total for the year, over 1,400. The total number of persons inspected, consisting of passengers and crews, was over 100,000.

Very respectfully,

A. H. GLENNAN,
Passed Assistant Surgeon, Marine-Hospital Service.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

CAPE CHARLES QUARANTINE STATION—POST-OFFICE ADDRESS, FORT MONROE, VA.

From November 30, 1893, to November 30, 1894, 5 vessels were disinfected and 147 were inspected and passed.

On one of the above infected vessels there had been one death from yellow fever at sea.

Three cases of yellow fever were admitted to hospital on Fishermans Island.

REPORT OF THE MEDICAL OFFICER IN COMMAND.

DISTRICT OF THE SOUTHERN ATLANTIC SURGEON'S OFFICE,
Cape Charles Quarantine, September 15, 1894.

SIR: I have the honor to report the following additions, alterations, and repairs at Cape Charles Quarantine Station during the fiscal year ended June 30, 1894. Also additions, alterations, and repairs necessary at this station for the fiscal year ending June 30, 1895. An estimate of probable cost is also attached:

Fishermans Island.—A gangway 656 feet long of two rows of piles 10 feet apart, piles in each row spaced 8 feet apart. Shore end of gangway extending inland a short distance beyond mean high tide. Water end of gangway joins onto a wharf extending 47 feet on each side of the gangway and 32 feet beyond terminus of gangway. The boiler room is 19 feet long by 21 feet wide. The laundry room 30 feet 9 inches long by 21 feet wide. The two other wings of the said building are intended for dining rooms, which are 60 feet long by 20 feet wide each. A large tank, 3,500 gallons capacity, for storing water collected from the roof stands outside the building in the angle of the juncture of the dining-room wings. Two detention barracks, each 300 feet long by 24 feet wide, divided into six compartments; these compartments are 50 feet long and contain 96 bunks, 576 bunks in each barrack, and 1,152 in both. A well was sunk about 345 feet below the surface; the capacity of well is 20,000 to 30,000 gallons in twenty-four hours, pumped by steam. The old dwelling house was reshingled; weatherboarding renailed. The water tanks for collecting water from the roof of the dwelling repaired and made serviceable. Three coats of lead and oil were applied to the old dwelling house, which had never been painted before this time.

Quarantine ship Jamestown.—A steam disinfecting chamber was installed on the ship *Jamestown*, and a house built over the same inclosing about one-third of the spar deck of that vessel. This vessel was painted and otherwise kept in repair.

Fumigating steamer Robert Koch.—Was docked and painted. New grate bars were provided, and the vessel otherwise kept in repair.

Boarding steamer Dagmar.—Was docked and her bottom cleaned and painted, new awnings and grate bars provided, and the vessel otherwise kept in good order.

Very respectfully,

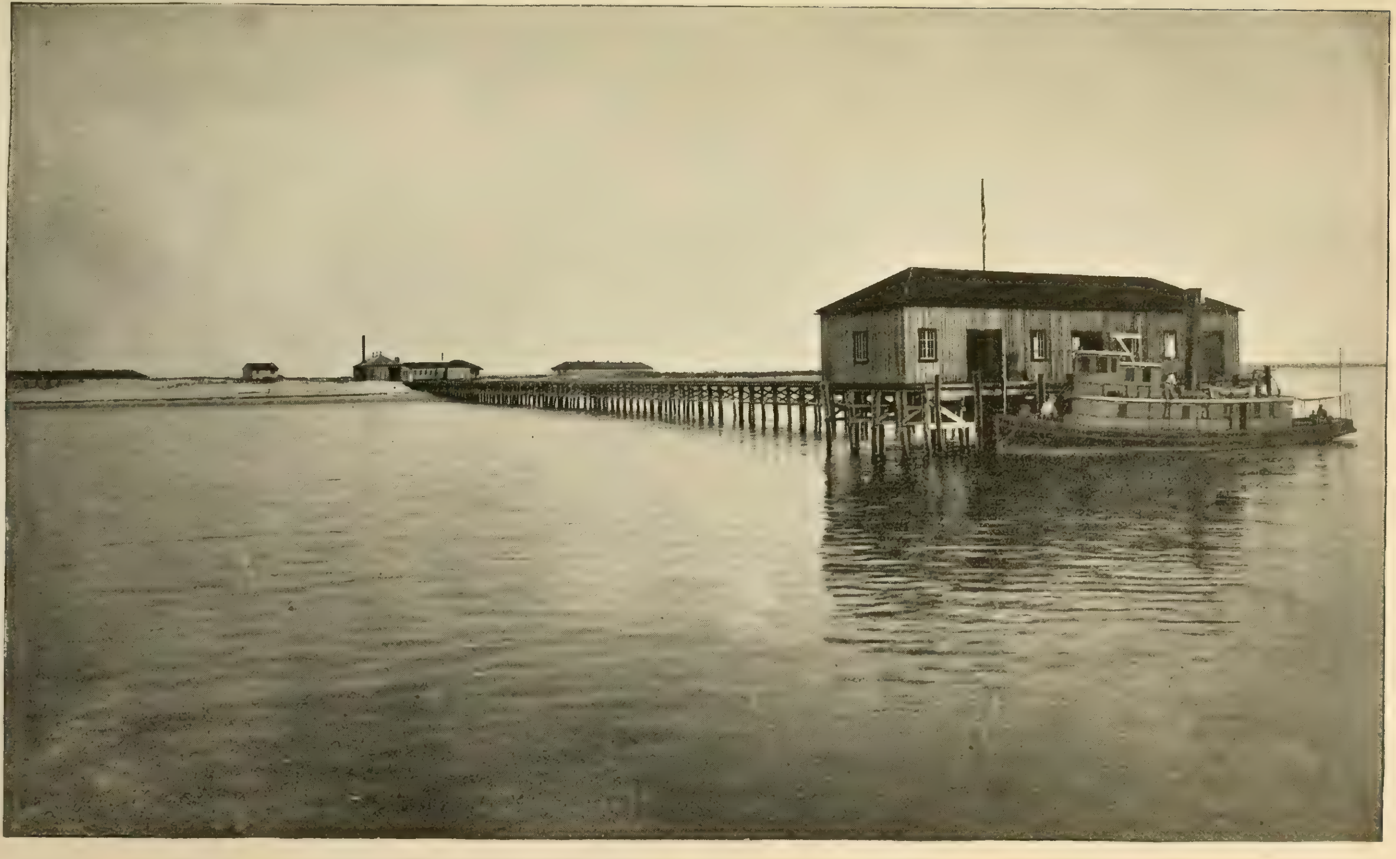
T. B. PERRY,
Passed Assistant Surgeon, Marine-Hospital Service.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

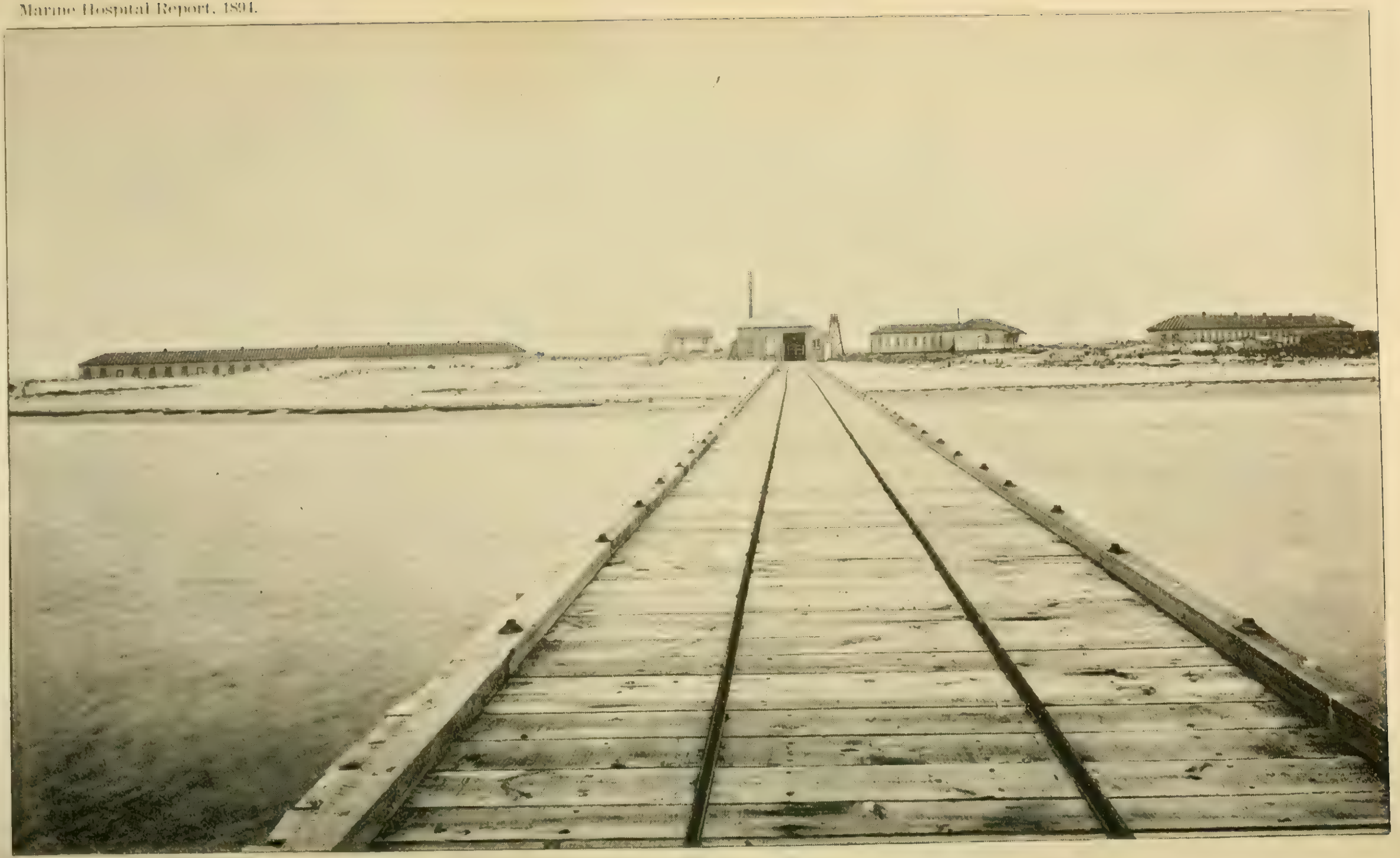
CAPE CHARLES QUARANTINE, *September 17, 1894.*

SIR: I have the honor to transmit herewith report of additions, alterations, and repairs made at Cape Charles Quarantine Station during the fiscal year ended June 30, 1894; also the additions, alterations, and repairs necessary for this station during the current fiscal year, together with an estimate of the probable cost of the latter.

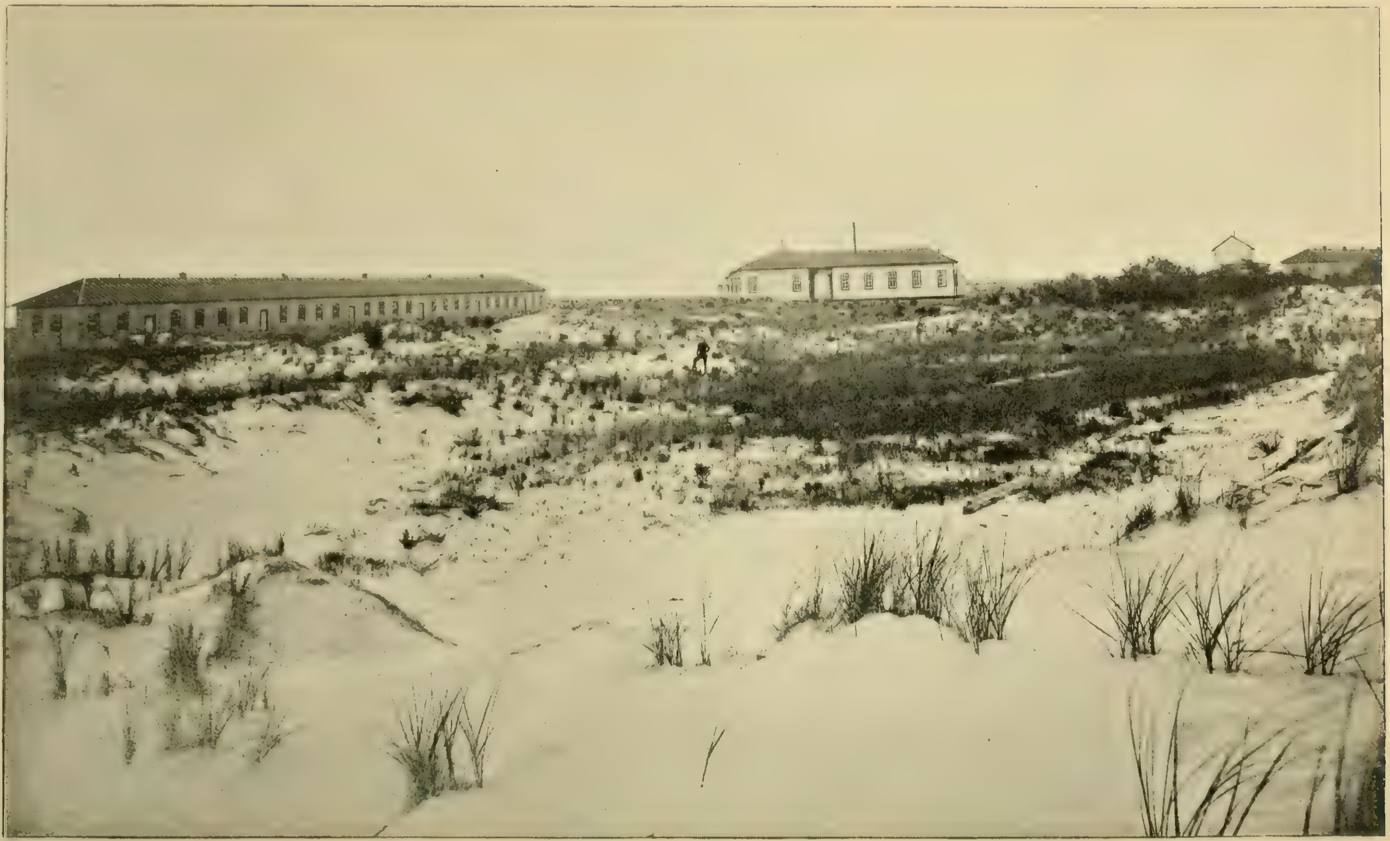
The delay in forwarding this report is due to the difficulty experienced in preparing specifications for the work, and principally for the tardiness of parties in furnishing estimates on same after they had been placed in their hands. In consequence of the delay of the contractors in submitting estimates, some of the repairs mentioned as necessary in this report for the current year have been made under authority of paragraph 255, Revised Regulations, Marine-Hospital Service, 1889, and under special authority from the Bureau, namely, docking, cleaning, and painting the steamers *Dagmar* and *Koch*, in August; repairs made to the circulating pump of the steamer *Dagmar*. Bearing bar for grate bars steamer *Dagmar* straightened and brand and grate bars straightened.



U. S. QUARANTINE STATION, FISHERMANS ISLAND, OFF CAPE CHARLES, VIRGINIA. (VIEW I.)



U. S. QUARANTINE STATION, FISHERMANS ISLAND, OFF CAPE CHARLES, VIRGINIA. (VIEW II.)



U. S. QUARANTINE STATION, FISHERMANS ISLAND, OFF CAPE CHARLES, VIRGINIA. (VIEW III.)

New bearing bar for grate bars of steamer *Koch* and new rudder chain for same boat provided. Material was purchased and bridge wall of furnace of steamer *Koch* repaired by the machinist of the ship *Jamestown*. Main boiler braces of steamer *Koch*, which were burned in two, were removed, welded together at shop, and replaced by engineer department of steamer *Dagmar*.

The port-side gangway ladder of the ship *Jamestown*, which was not in use, was put at the juncture of wharf and gangway at Fishermans Island. An iron ladder not in use was removed from the steamer *Ewing* and placed on the front of the wharf to be used as a sea-way ladder at Fishermans Island; some cleats and ringbolts not in use were removed from the *Jamestown* to the same wharf, where they will be useful to make vessels fast until larger cleats are provided. A pair of small boat davits belonging to the steamer *Dagmar*, but not in use, and a small boat which came with the *Dagmar* were placed on the gangway at Fishermans Island.

The ship *Jamestown* was painted, tar oil applied to the spar deck and the rigging, and small boats put in repair, and anchor stock for port anchor provided. All of the repairs just mentioned, both at the island and on the ship *Jamestown* and steamer *Koch*, were made by the employees of this station with the exception of making of anchor stock.

The radiators and boiler are in place on the *Jamestown*. To put it in serviceable condition it would be necessary only to purchase the piping and fixtures for connections. The machinist on the *Jamestown* can do this work. The barracks, dining room, laundry, and kitchen building can be connected with the storage-water tank, and board walk from gangway to storeroom constructed by the keeper of the island if the material for same is purchased.

Very respectfully, T. B. PERRY,
Passed Assistant Surgeon, Marine-Hospital Service.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

SOUTH ATLANTIC QUARANTINE STATION—POST-OFFICE ADDRESS, VIA INVERNESS, GA.

From November 30, 1893, to November 30, 1894, 32 vessels were disinfected and 72 were inspected and passed.

On the above infected vessels there had been 6 cases of yellow fever at Havana, 2 cases at Rio de Janeiro, and 12 cases and 4 deaths at Santos. Four cases of yellow fever and 1 of smallpox were taken from vessels at this quarantine station.

REPORT OF THE MEDICAL OFFICER IN COMMAND.

SOUTH ATLANTIC QUARANTINE, *August 17, 1894.*

SIR: In compliance with your letter of the 9th instant (H. W. A.), concerning changes and repairs at this station during the past year and those needed during the present year, I have the honor to state that since my recommendation of July 7, 1893, there have been no repairs, as then recommended, about the hospital or lazaretto, and I would again suggest that the attendants' room and kitchen and pantry combined be built, as well as the closet, sewer, and water tanks, or the extension of the water main. At the station headquarters all buildings have been kept in minor repair and twice whitewashed, the steward's quarters painted inside, screens of wire gauze fitted into doors and windows of attendants' quarters, a concrete walk laid between the office and the surgeon's quarters, a reading room commenced and partially built for the use of the employees, and a three-quarter-inch iron pipe carried from the stable connection into the vegetable garden at a cost of $17.10. The large barge has been hauled out, her copper repaired, and then thoroughly painted. All boats have been kept in good repair. There have been furnished at the surgeon's quarters two grates and mantels of marbleized slate, and one at the steward's quarters, at a total cost of $185.50. Minor repairs to the cooking ranges aggregate $21.75.

At the north end the shed covering the disinfecting plant has been completed at a cost of $639.20, including riding bitts for mooring purposes. All buildings at this dock were painted two coats outside, the disinfecting shed whitewashed inside, and the machinery painted and kept in good order. An artesian well, some 275 feet in depth, with a flow of some 40,000 gallons per day, has been completed at a cost of $1,200, including boiler and pump, to be used in delivering the supply to engine and tanks. No repairs have been yet commenced upon the wharf itself. During the year there has been furnished the station a naphtha launch at a cost of $3,050, which has needed painting and minor repairs, but has been of the greatest use to the station.

In addition to the improvements suggested at the lazaretto, I would state that the surgeon's quarters need painting very badly, inside and out; the roof must be repaired and the piazza flooring partially renewed. All the fences about the reservation are much in need of repair, and the board walks must be renewed. The reading room for the attendants, now about half completed, can be finished at a cost of $75. A coal house, as recommended last year, should be built. At the north end the repairs contemplated on the ballast wharf should be made as early as practicable; also the gangway, which now extends shoreward some 200 feet, should be completed.

In view of the existing conditions, I again recommend that some adequate arrangement be made for the treatment of the sick, and to this end the erection of a small hospital at some point within the quarantine grounds easily accessible, thus insuring attention without the danger to the patient which would be entailed under the present arrangement.

As before suggested, a telephone communication between the disinfecting plant and the surgeon's office would be of much use and tend to facilitate the public business.

All of which is respectfully submitted.

Very respectfully,

EUGENE WASDIN,

Passed Assistant Surgeon, Marine-Hospital Service.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

SOUTH ATLANTIC QUARANTINE, *August 18, 1894.*

SIR: In compliance with your letter of the 9th instant (H. W. A.), I have the honor to state that during the year ended the 30th of June there have been 79 vessels inspected at this station, with a total of 68,229 tons. Of these 48 were "passed" without detention, and 31, including 5 steamships, with a capacity of 21,320 tons, were disinfected according to modern methods. Also, there have been detained for inspection during the months of July, August, September, October, and November, 1893, 48 "suspects," to whom 386 rations, at an average cost of 35.4 cents, were issued, at a total cost of $136.86.

Very respectfully,

EUGENE WASDIN,

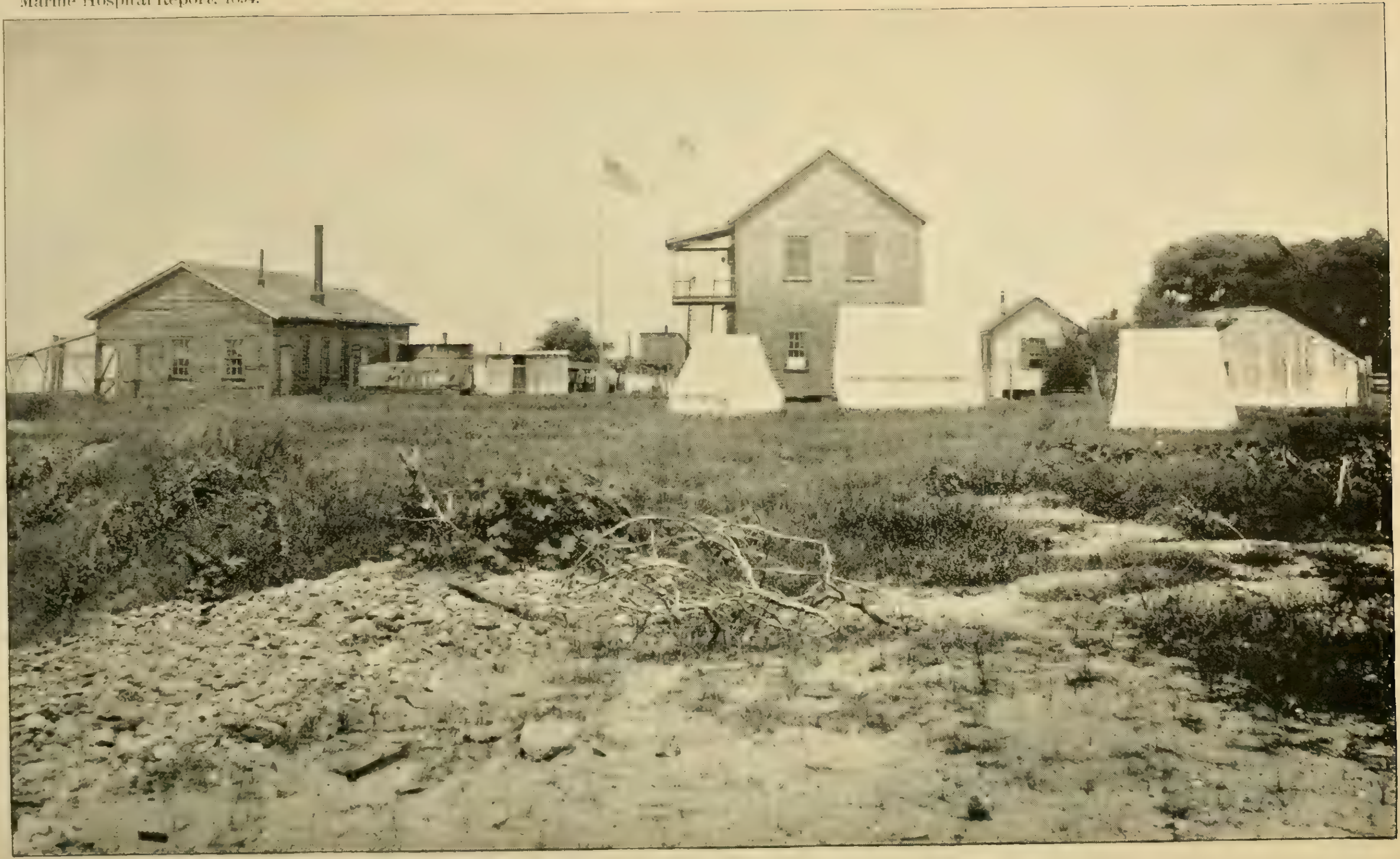
Passed Assistant Surgeon, Marine-Hospital Service.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

BRUNSWICK QUARANTINE.

From November 30, 1893, to November 30, 1894, 58 vessels were disinfected and 90 were inspected and passed.

U. S. QUARANTINE STATION, BRUNSWICK, GEORGIA. (VIEW I.)



U. S. QUARANTINE STATION, BRUNSWICK, GEORGIA. (VIEW II.)

One case of yellow fever developed on the American schooner *Sadie Willcutt*, from Cienfuegos, after her arrival in quarantine, and two cases on the Spanish brigantine *Amalia*. Both vessels were sent to South Atlantic quarantine for further treatment.

REPORT OF THE SANITARY INSPECTOR, MARINE-HOSPITAL SERVICE, IN CHARGE OF STATION.

BRUNSWICK QUARANTINE, *September 20, 1894.*

SIR: I have the honor to submit a report of the alterations and repairs that have been made at Brunswick (Ga.) Quarantine Station during the fiscal year ended June 30, 1894:

When the Marine-Hospital Service assumed charge of Brunswick Quarantine, August 10, 1893, the means of enforcing quarantine regulations at this station were poor, there being no facilities for the disinfection of vessels as prescribed by the Secretary of the Treasury. Since that time an entirely new plant, with the exceptions of wharves and outbuildings, has been constructed, consisting of ballast plant with the necessary adjuncts for the quick and easy discharge of ballast, and a disinfecting plant built after the latest and most approved plan, and furnished with all of the required appliances for the proper disinfection of vessels.

The ballast plant was built at a total cost of $1,395, and consists, in addition to wharf, of 1 Lidgerwood 12-horsepower hoisting engine complete; 3 iron ballast tubs, of 12,000 cubic inches capacity each; 2 ballast cars, each with a capacity of 45 cubic feet; 450 feet of trestle, averaging 7 feet in height, built of heavy material, with car track of steel rails for conveying ballast suitable distance from wharves. A house 12 by 14 feet and 10 feet high has been erected over the engine. One dozen wheelbarrows have been purchased for dumping stones along the water front to make secure the earth ballast against the invasion of the tides.

The disinfecting plant was erected at a cost of $5,533.00, and was put in operation May 1, 1894. It consists of 1 steam disinfecting chamber, 2 cars, 2 transfer tables, 1 boiler, 1 engine, 2 pumps, 1 sulphur furnace, 3 tanks, and a sufficiency of piping and hose to make all necessary adjustments.

The steam disinfecting chamber is built of steel, is double in construction, consisting of an inner and outer chamber, each being connected to boiler by suitable piping and interconnected by a system whereby the steam can be interchanged as desired. Each chamber is connected with vacuum pump, whereby a partial vacuum can be produced in either, and connected also with steam trap, which relieves either of condensation. The chambers are supplied with steam and vacuum gauge, safety valve, and two thermometers, arranged to extend at right angles into the inner chamber. The doors are supplied with cranes, and are so adjusted that they may be quickly opened or closed.

The boiler is a 30-horsepower vertical, suitable for rapid steaming, and has all of the necessary appurtenances, and the required piping, valves, etc., for connecting it with steam chamber, engine, and pumps.

The sulphur furnace is double, with reservoir and suction fan. A galvanized-iron pipe 8 inches in diameter and 90 feet in length, supplemented by 30 feet of 6-inch rubber hose, for conveying sulphur fumes into hold of vessel, is attached to the fan.

The engine used for driving fan is adapted for high running speed, and is fitted with fly and driving wheel and the necessary belting.

The pump used for bichloride solution is a 4½ by 3¾ by 4 inch Worthington duplex, with double connected suction to bichloride tank and sea water, and the discharge is provided with hose connections for both 1-inch and 1½-inch hose. Each discharge is provided with 150 feet of hose.

The vacuum pump is 6 by 5¾ by 6 inch Worthington duplex complete, with delivery and suction pipes for attachment to steam chamber.

The boiler, steam disinfecting chamber, and steam pipes have a covering of magnesia.

The plant is furnished with three cypress tanks of 2,500, 4,500, and 7,500 gallons capacity. The smallest is used for the solution of bichloride and is connected through pump to sea water and double hose discharge. The second tank supplies boiler, to which it is connected by piping and injection, and is also connected with the third or storage tank through suction hose from pump.

The station has been furnished with a machinist's workbench and vise, a tool closet, with an outfit of tools necessary for making adjustments and keeping machinery in order.

The main building inclosing this machinery is 44 by 27 feet, 12 feet between floor and ceiling joists, with an addition 20 feet in length and 15 feet wide. The framing of the building is of strong and heavy material and thoroughly braced, and supported on solid foundation. The floor is of dressed lumber, 2 inches in thickness, and rests upon joists 2 by 10 inches, 16 inches between centers, braced with "herring-bone" bridging. The ceiling joints are 2 by 8 inches, spaced 2 feet between centers. The building is provided with sixteen windows, twelve light, 10 by 14 inch glass, two double doors 6 by 8 feet, three single doors 3 by 7 feet. To the roof are attached four galvanized-iron gutters with down spouts and pipe for connecting same with storage tank. The building was erected at a cost of $764.50.

The station has been furnished with a naphtha launch 30 feet in length, 6½ feet beam, coppered, and fitted with 4-horsepower engines; cost, $1,500; one Whitehall boat, $60; one barge or flat 30 feet long, 10 feet wide, and 3 feet deep, $125.

Quarters for officer in charge have been repaired by additional story 14 by 23 feet and 10 feet in height, ceiled, having five windows and one door and piazza 8 by 14 feet, with stairway leading to ground below. Total cost, $195.

A small room 12 by 14 by 10 feet, ceiled inside, has been built for use as cookroom. Cost of material, $15.25; cost of labor, $12.10; total, $27.35.

Repairs to launch *Mary Lee* have been made, at an expense of $64.40; piling for mooring of launch driven, at a cost of $6.

The total expense of alterations and repairs may be stated as follows:

Cost of disinfecting machinery and putting up same	$6,366.60
Cost of ballast plant complete	1,395.00
Buildings	986.85
Naphtha launch, barge, and boat, including repairs on launch	1,749.40
Tanks	205.00
Total	10,702.85

The repairs necessary to be made at this station for the coming year and the cost thereof depends whether or not the station is to remain at its present site. Remaining here, the most urgent need will be for an additional ballast wharf, since vessels bringing ballast are frequently detained on account of there being only one wharf at this station at which ballast may be discharged. A new wharf intended for such was partially erected by the city of Brunswick in the year 1893, but was not completed on account of the United States assuming control of this station. It is yet in good condition, and can be completed and furnished with all necessary piling and dolphins for mooring of vessels for a total cost of $300. The necessary car tracks and ballast cars can be added at a cost of $270. This wharf when completed will have a front 60 by 30 feet, with an extension 350 feet in length and 10 feet in width, and with an average height of 20 feet. This extension is at right angles with front wharf and extends toward the shore. It is built upon piling surmounted by heavy plates and covered with plank floor of suitable thickness. It is ready for car tracks, and the front wharf alone remains to be added. This would give sufficient dumping space for ballast for one year or more without change of car tracks. An additional hoisting engine will be required for this wharf, the cost of which will not exceed $700.

Before another season the site of the present trestle for dumping of ballast will require removal, or trestle to be built higher, since during the present season the accumulation of ballast is now almost on a level with car track. The trestle can either be moved from its present site, or elevated sufficiently, at a cost of $250.

One of the urgent needs of the station is a suitable building for the accommodation of masters and crews of vessels when compelled to take them ashore. There are only two small buildings designed for occupancy, belonging to the station, containing together seven small rooms, all of which, save one, are occupied by employees of the station. I would recommend that $500 be expended in procuring a suitable building to meet this exigency.

Another necessary expenditure is to supply the station with water. During the rainy seasons of the year sufficient water is obtained from rainfall collected from roofs of the buildings. This, however, is not practicable during the entire year, especially during the summer months, when the need of such is most urgent. This deficiency has been supplied during the past year by obtaining water from the city by means of boat at a cost of one-half cent per gallon. I recommend an expense of $400 for constructing a well for the supply of this station with good water. The probable depth of the well necessary to get sufficient flow of water will not exceed 350 feet. A 3-inch well of this depth, with all of the necessary piping to connect it with points to be supplied, need not exceed this amount.

The buildings of the station, built by the Marine-Hospital Service, need painting for their preservation. I recommend that $100 be expended for material for this purpose. The painting can be done by employees of the station. This makes a total of $2,520 for the necessary repairs at this station for the present fiscal year.

Respectfully, yours,

R. E. L. BURFORD,
Sanitary Inspector, Marine-Hospital Service.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

KEY WEST QUARANTINE—LOCATION, DRY TORTUGAS—POST-OFFICE ADDRESS, KEY WEST, FLA.

From May 12 to November 30, 1894, 35 vessels were disinfected and 1 was inspected and passed.

From these infected vessels there were taken into hospital 11 cases of yellow fever, 1 of which proved fatal; also, on these vessels, there had been 3 cases of yellow fever and 1 death in Havana just prior to departure.

The following reports have been received from the medical officer in command:

REPORT ON OPERATIONS.

KEY WEST QUARANTINE,
Dry Tortugas, Fla., August 21, 1894.

SIR: In answer to your circular letter (H. W. A.) of the 9th instant, asking for a report of the operations of the quarantine service at this station during the fiscal year ended June 30, 1894, I would respectfully submit that 24 vessels were treated at this station during the period; 17 in 1893 and 7 in 1894. Of these there were 3 which arrived with yellow fever aboard; 2, the British barkentine *Antilles* (August 8), and the British barkentine *J. N. Dexter* (October 4), in the season of 1893; and 1, the British barkentine *Albatross* (June 17), in that of 1894. Each vessel had two cases of fever.

In 1893 the patients were treated on this island (Garden Key) in the buoy shed. This year they are treated on Bird Key, about a mile or a mile and a quarter distant, and communication with Garden Key maintained under such conditions as to render it well-nigh impossible to convey infection.

Nearly all of these vessels were from Havana, and a number were probably infected, as evidenced by the occurrence of fever aboard in that port.

No new case of yellow fever occurred in any vessel after arrival.

Last year considerable difficulty and delay were at times experienced in getting vessels to the wharf, which is not well located for that purpose. On June 1 of this year; however, the tug *Chas. Foster*, United States Marine-Hospital Service, was assigned to the station, and this difficulty has not been experienced since. This vessel is of the very greatest use to the station, and, indeed, it would be impossible to conduct it in a manner satisfactory to shipping without it.

The plant is a good one, and disinfection and detention of vessels is in accordance with the United States quarantine regulations.

There is one peculiarity in this compared with the other refuge stations, viz, that the vessels which come here are not sent from other ports, save a very few from Key West, Charlotte Harbor, and Tampa. Those that come do so preferring it to other quarantine stations.

Its location is exceedingly favorable, especially for vessels from Cuban or Gulf ports, nearly all of which pass in immediate proximity to it. The harbor is easy to enter, and gives safe anchorage in deep water. The place is very healthful, and the vessels are free from the swarms of mosquitoes which infest so many quarantine stations. Judging from the opinions I have heard expressed by masters, it is becoming very popular among the sailing vessels which come into the Gulf.

Respectfully, yours,

H. R. CARTER,
Surgeon, Marine-Hospital Service.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

REPORT ON ALTERATIONS AND REPAIRS.

KEY WEST QUARANTINE,
Dry Tortugas, Fla., August 31, 1894.

SIR: In answer to Bureau circular letter (H. W. A.) of August 9, 1894, directing me to report the alterations and repairs at this station for the fiscal year ending June 30, 1894, I would say that they consisted in (1) building a coal shed by the side of the gangway from the wharf, at a cost of $481.19 for material, the labor being done by the attendants. This is a good, well-constructed building, capable of holding about 250 tons of coal. (2) Painting part of the roof over the quarters, at a cost of about $21.25 for material, the labor being done by hospital attendants. (3) Minor alterations and repairs were made to the disinfecting plant in June, 1894, increasing its efficiency and rapidity of action. Also some alterations were made to get a proper supply of fresh water to the wharf for the steamer and other purposes. (4) The stumps of worm-eaten piles of the old light-house wharf were cut off by a diver close to the sand, and some other obstructions to vessels lying at the dock removed in June, 1894, at a cost of $132.

The recommendations and estimates for the present fiscal year are matters which require considerable time and care to make correctly. So far I have not been able to do so. Just as soon as I can I will make them.

Respectfully, yours,

H. R. CARTER,
Surgeon, Marine-Hospital Service.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

REPORT ON EQUIPMENT OF STATION.

KEY WEST QUARANTINE,
Dry Tortugas, Fla., September 13, 1894.

SIR: I beg leave to submit the following report on the equipment of this station for your consideration:

The plant here is too well known to the Bureau to need description.

The steam chamber is satisfactory, although less convenient and requiring more care in its management than the newer chambers. A steam exhaust has been added to it by which a vacuum of 6½ pounds can be obtained in four minutes, and by going over the lead joints, as will be done this winter, this can be increased to 10 pounds. It works more quickly than the vacuum pump and takes less steam, although I do not know that it adds materially to its efficiency.

Owing to having no self-registering or electrical thermometers, I can give no accurate observations on the penetration of the steam and temperature attained in beds, pillows, etc.

The sulphur furnace and annexa are also satisfactory, and for the class of vessels we have as good, I presume, as are made.

The arrangement of the delivery pipe can be bettered, but what we now have answers very well.

The arrangements for using the bichloride solution, however, are bad. The tank on top of the shelf leaked so badly that it destroyed the gutters and rendered the water in the large tank unfit for drinking, besides eating through the galvanized-iron covering of the platform and injured the covering of the steam chamber. I took it down and set it on the wharf. It holds only 1,000 gallons. The solution is delivered by a rotary pump turned by hand, and it turns very hard, through a 1-inch hose and a one-eighth-inch nozzle. Now, to wash a vessel properly with a one-eighth-inch stream of water by hand power is a long and laborious process, and impatience and sympathy for the men at the pump militate against thoroughness.

I have fitted up a steam pump, a small one, and use that now on the same hose with a one-quarter-inch nozzle, four times the area of the old one. The result is more satisfactory.

This pump is lined with brass, and although I use every precaution, taking it apart after each use of it, it will soon be ruined by the mercury.

The hose, also, is too small for rapid and efficient work, and the tank is too small. We frequently have to stop and refill and redissolve the bichloride during the disinfection of a vessel.

I propose to use the 3,000-gallon iron tank, asphalted inside, for the bichloride tank, and pipe it out through a 2-inch pipe, delivering it through a 1½-inch hose and a three-eighths-inch nozzle, using for this purpose a rotary pump, driving it, however, by the little engine which works the sulphur fan, by means of a handwheel. The only expense will be the hose, $0.75; the handwheel, $5, and the pump, $14. The work will be done by the engineer of the *Foster* during the winter. New hose would have to be purchased any way. The 1,000 gallon tank will be cemented and used to catch water from the coal shed for use on the wharf.

We have been greatly inconvenienced by having the apparatus for all of our disinfecting processes at one place, while by United States Regulations forty-eight hours must intervene between the fumigation of the hold of a wooden vessel and its washing with bichloride solution. This requires either that a vessel must lie at the wharf forty-eight hours, keeping others waiting, or else that she must be moved away after fumigation, brought back for the bichloride, and again moved when all was completed. The first method is wrong to the other vessels, and the second very annoying, inconvenient, and costly in coal; still it is this that I have generally done when a vessel was waiting. It seems essential to the smooth and efficient working of the station to have a means of using the bichloride solution with the vessel elsewhere than at the wharf.

The present needs of the station will be best met by calking the forward tank on the *Foster*—it leaks badly at present—and putting an iron pump aboard her with the required connections, and using this tank and pump for the bichloride solution. The vessel can then be moved from the wharf as soon as the SO_2 process and steaming the fabrics is complete, three to eight hours, and taken to her anchorage outside, and at the proper time the *Foster* go alongside and wash her down with bichloride. I think this will cost the Department nothing, as the engineer believes that he can so change one of the pumps aboard her, remove the brass lining and replace it with iron, as to be what we want. It may be necessary to purchase an iron pump, price $175 to $200. It will be worth tenfold that amount to have an apparatus for using bichloride solution on vessels at their anchorage, and will increase threefold the capacity of the station for work, if it can get it to do.

The wharf is in a bad place and badly located in that place. I see no way to remedy it, and it will do with our present clientèle well enough. If the station is ever developed so as to handle a fair proportion of the vessels and steamers entering the Gulf, there must be either (1) a new wharf built, (2) the two points which "pocket it" cut away, or (3) a floating disinfecting plant provided.

The choice lays between (2) and (3), and probably (2) is the cheaper and the best, while a floating plant possesses some advantages of convenience over a stationary one and does quicker work.

The wharf will be extended, I think, sufficiently by dolphins, which are contracted for now, and can be extended as much as may be desired, and all needed moorings provided very economically by the same means and by anchors.

The house on the wharf is badly placed and will eventually be pulled down by some vessel coming in where it is. It should be put up farther from the face of the wharf and lower.

The steamer Foster.—Owing to the position and location of the wharf a tug for handling vessels is a necessity, and without one I would recommend closing the station as at present equipped. The *Foster* fills this function well. She is strong and sufficiently swift, and is simply invaluable.

The only defects are the nature of her engines—a steeple compound, which may catch on a center at a critical moment—her large coal consumption, and the fact that her forecastle is uninhabitable in this climate. The coal consumption has been brought down by her engineer by various changes to about three-fifths what it was on arrival. The first defect must be guarded against; the last endured. It would be an error to say that she exactly suits the work, but she does exceedingly well. She needs no alterations, only minor repairs, new smoke stack, etc., which, except the necessary docking once a year, the engineer can do at the station during the winter.

For the handling of ballast vessels, the ballast incapable of disinfection, our facilities are extremely meager. The best that we can do is to hoist it out (if the wharf is free we can use our hoisting engine) and replace it by sand. This sand must come from East Key, 4 miles away, on the deck of the schooner *Montross* and be hoisted aboard. Now, unless the vessel can lie at the wharf all of this time, and that is scarcely conceivable, she must do all of this work by hand, and all of the hardest, getting the sand aboard the schooner in wheelbarrows, by hand in any event. Anything would be preferable to a vessel, and I would advise a vessel with a large amount of ballast to discharge and replace not to stop here. Still with the present clientèle of the station I do not feel justified in proposing any better method of getting ballast. The chance is there will be only a small amount of it taken here, and the only efficient methods which I can think of involves considerable expense in outfit. I do not, however, regard the ballast matter one of great importance here at present; most of the vessels we will get are empty and part of the remainder have ballast capable of disinfection.

The water supply is a question which I can not touch on until I know more about it. It is an important question.

Respectfully, yours,
H. R. CARTER,
Surgeon, Marine-Hospital Service.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

REPORT ON THE LOCATION OF THE DRY TORTUGAS AS A QUARANTINE STATION.

KEY WEST QUARANTINE,
Dry Tortugas, Fla., September 13, 1894.

SIR: I have the honor to inclose herewith a short report on the location of this station as a place for quarantine, which, if you think fit, might be put in the annual report. I really write it for your own consideration, and suggest its publication because things published are more attentively considered and more often referred to, being convenient of access, than a manuscript report.

I am aware that one does not know all of a station from a three months' residence, and it might have been better to have waited to the end of term of service here. I would see more, and it may be, a little differently. Nevertheless, I think all in this is true—is self-evidently true. That the station as now conducted will disinfect nearly all of the sailing vessels from the West Indies, practically American schooners from Cuban ports, is, I think, beyond dispute. I have not heard from Pensacola, but leaving out that port, we have handled about four-fifths of their sailing vessels which have entered the Gulf since June for ports east of the Mississippi. We will get about all next year. That as now conducted its clientele will be confined to this class, save steamers for Charlotte Harbor, is also, I think, true. The quarantine fee cuts no great figure in the expenses of a steamer and, while it acts in our favor, it is not much of a factor. For sailing vessels it is proportionately much higher, and hence more important.

If the method I suggest in the accompanying paper is put in practice and the station is properly handled, I think it is equally true that we will disinfect the steamers from Cuban ports for Mobile, Pensacola (possibly Tampa), New Orleans, and Apalachicola.

I do not know if the plan is now feasible or consistent with the general quarantine policy of the Service. Of that the Bureau must judge; my part is to put the plan and the consequences of its adoption clearly before you from the standpoint of Tortugas.

It is a waste of money to greatly develop this station unless we can make it proportionally useful.

We need to have the cooperation—control is better—of the ports of destination (as many as possible) to begin this thing.

I believe that a few general considerations on this place as a quarantine station would be of service to the Bureau in enabling it to judge of its capabilities and defects, and hence mature general plans for its management consistent with its general quarantine policy.

The defects of its location are: (1) The bad reputation the neighboring reefs have for wrecks; (2) the difficulty of prompt communication with the mainland, getting supplies, etc.; and (3) distance of the station from ports of destination of vessels rendering it impossible for a certain class of vessels to leave it save with considerable ballast, about one-half full ballast; with this must be considered the difficulty of obtaining ballast here. I know of no others.

The first is rather a matter of repute than real danger. It is not a dangerous place to enter or to leave.

The second undoubtedly increases the difficulty of administration and renders it difficult for vessels which need supplies to get them. It is a matter of small importance save as adding to the expense of administration.

The third is a real and serious difficulty for vessels in ballast, and a very serious difficulty if in ballast incapable of disinfection. It causes delay even if in hard-stone ballast.

The advantages of its location are:

(1) Its isolation is perfect.

(2) It is a very healthful place, free from malaria, and the anchorage free from mosquitoes, etc.

(3) A perfectly safe, commodious, and easily entered harbor, with good holding ground and deep water. The smallest vessels are safe in Bird Key and Garden Key harbors. The largest can enter them. There is room enough in the general harbor—Man-of-War Harbor—for a fleet; hence vessels need not be crowded. There are three entrances to the harbor, and no wind can blow which is not a fair wind to enter and leave by one of them.

(4) Its position at the entrance of the Gulf. Every vessel coming into the Gulf by the Straits of Florida must make Tortugas Light and come within a few miles, 5 to 18, of this station. Every vessel from the West Indies not coming through the Florida Straits or coming up from Brazil makes Cape San Antonio Light, and thus must come close, 30 to 100 miles, according to destination, to the station. Save vessels from Mexico and the Carribean ports of South America, practically all vessels for Gulf ports requiring quarantine for yellow fever pass close to the station, and these pass close to it if going into the Atlantic.

(5) Its position with regard to Havana and Cuban ports. For the Gulf, Havana is the port principally to be feared; probably as much as all the other yellow-fever ports together, and this place is only eight or ten hours by steamer or eighteen to twenty-four hours by sailing vessel from Havana (and the wind is always fair), and on the route of every vessel entering the Gulf.

Herein lie many advantages:

(*a*) It prevents the infection of vessels. In many cases (sailing vessels are here referred to) when yellow fever develops on vessels it does so just about the time of leaving or just afterwards. This is so well known that it is only necessary to mention it. Of six vessels which have come here with yellow fever aboard so far this season, three left Havana having had no fever while there. By coming here the sick are taken off, the vessel disinfected, and the remainder of the crew are removed from further exposure to infection within a very short time from the development of the first case, in one instance only six hours. If the vessel continues to her loading port, from two to fourteen days must elapse before the same thing can be done, and the chance of contamination of the vessel and further sickness among the crew is greatly increased. My experience at the Gulf quarantine confirms this. If a vessel from Havana had one case en route, she generally had several by the time she arrived.

(*b*) If the vessel is infected, i. e., has a focus of infection aboard, the chances of infection of the crew thereby are less if exposed to it a short time—it may be less than one day—than for a longer period. This is especially the case if, as is not unusual, the focus of infection is in the packed dunnage of the crew. The men are not apt to do any unpacking in a single day's run, and are certain to do it if the voyage is long. Here we take pains to have our immune crew take the bags of the crew of the vessel on the wharf and unpack them there, the vessel's crew staying aboard and having nothing to do with it.

(*c*) Another consideration, although not strictly a matter of quarantine, is the very great advantage to the sick. By stopping here they receive medical attention as soon as they are taken and not a few lives will be saved by so doing. The difference in mortality of yellow fever aboard ship and treated ashore is very great. The advantages enumerated under this head are of little importance to steamers on account of the short time required to reach their ports of destination. Also they more rarely have yellow fever aboard.

These reasons render the station a very useful one to sailing vessels coming from West Indian ports, especially from the more dangerous ones or those with sickness aboard. These vessels are generally without ballast or with little ballast, and are without doubt the most dangerous class that visit our shores.

For vessels from the Brazils—large sailing vessels in ballast and steamers—while convenient to their route, this station presents no advantage over quarantine at their port of destination, and for the former is decidedly less advantageous on account of the cost (in time) of handling the ballast here.

For steamers it is as good, no better than such other quarantine, the small loss of time in coming here being the only difference, and that, of course, is against this station.

Now the station depends for its clientele on vessels which come here voluntarily, and only such vessels will come as find it to their advantage to do so. Obviously, then, it will be sought by sailing vessels from Havana and the more dangerous West Indian ports, and under present conditions will not be sought by vessels from Brazil or by steamers. Some steamers will come, as they have come hitherto, because the advantages and disadvantages to them are almost evenly balanced.

Most of its clientele will be American vessels, and it must be considered in estimating its service to shipping that it is American shipping which is benefited.

Will its usefulness be confined to disinfecting sailing vessels from the West Indies for Gulf ports and from Mexico for the South Atlantic? If it did only this it would handle two-thirds of the dangerous vessels which enter the Gulf ports, and from a sanitary standpoint would fill a useful place, but its work would never be extensive. Under present arrangements I think this will be the case, and that the clientele of the station will indeed increase (as it has done this season), but not markedly so, and will not include the steamers in the same trades or the Brazilian sailing vessels.

I think I may premise that the quarantine of the future will be performed at a few thoroughly equipped stations, disinfecting for many ports at which inspection stations only are needed. These stations must be, as I said, thoroughly equipped and with a full corps of trained attendants and officers, and will of necessity be expensive, but less expensive than the aggregate of the many less-efficient stations they substitute. While its services to American shipping and its sanitary value to the Gulf ports may justify the equipment and maintenance of this station as such a station should be, yet its value would be greatly increased if it could be made as useful to the steamer trade from yellow-fever ports as it is to sailing vessels.

Now the ideal of maritime sanitation is to prevent the infection of the vessel at the port of departure; failing this, to disinfect her there and have the vessel free from infection when she leaves such port. Unless such a vessel carried some person who had contracted the fever and in whom it had not yet developed, and who, developing it, would infect the vessel again, there would be no need of disinfection or detention elsewhere; only an inspection to see that the above conditions did not obtain, and the part of quarantine most onerous to commerce, viz. the detention, could be done away with in whole or in part, depending on the length of the voyage.

This station being in the track of vessels coming into the Gulf is, for the purpose I am going to mention, almost the same as if at the ports which such vessels leave, and, to a certain extent, can fill the last rôle.

Vessels can be disinfected here and detained only such time as, with the time they will pass en route to their ports of destination, will make the required time of quarantine detention. If on arrival at her port inspection showed that no sickness had developed, and that the required time, counting from the disinfection ("last possible exposure to infection"), had passed, there need be no bar to her at once entering port in pratique. In other words, "the time en route from this station to her port of destination could count as time in quarantine," and the vessel would save that much detention.

For steamers this is perfectly safe. It is only from one to two (or at most two and a half) days from this place to any Gulf port to which vessels are at all likely to go, and it is not possible that a man would develop yellow fever and recover so completely within that time as not to be known to have been sick.

There would be no sanitary risk in this plan. If sickness occurred en route it would of course necessitate a second disinfection and detention, as, indeed, it would if it occurred at this station, and do no further harm.

The statistics of the quarantines of the United States which I have been able to see—Charleston, Savannah, Sapelo, Brunswick, Pensacola, Mobile, Gulf Quarantine, and Louisiana—show that steamers rarely develop yellow fever after disinfection, unless they have had it en route or on arrival, and the small percentage that do would be still further reduced by the detention here; and nearly all of the steamers thus treated, or practically all, if proper care can be taken in their selection, would develop no fever after leaving, and save this one or two days' delay, worth from $195 to $250 per day. In the few cases in which fever might develop en route no harm would be done.

By selecting the vessels, the vessel, the port of departure, and the port of destination all to be considered, the same thing might be done for sailing vessels, but for some ports they might be out so long that cases of yellow fever might possibly occur aboard, recover, and not be discovered by the inspector. It could then not be a general thing with them.

This method is unobjectionable from a sanitary standpoint. It is safer than disinfection at the port of departure, there being no chance of recontamination here, and nearly as good commercially. There is no place in the Gulf so well suited for putting it in practice as this. It will be as advantageous for all steamers coming into the Gulf to report here for quarantine as it is now for the sailing vessels, and the station will occupy a position of sanitary importance and commercial value second to none in the Gulf.

If vessels are disinfected in the manner required by the West Indian Quarantine Regulations in the ports of departure (par. 12, Art. VIII) there will be no need of such vessels stopping here.

The equipment of this station is ample to handle a fair number of vessels, and but little additional expense in plant would be needed for a large number, 300 to 400 per season.

Respectfully, yours,
H. R. CARTER,
Surgeon, Marine-Hospital Service.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

GULF QUARANTINE—LOCATION, SHIP ISLAND, 12 MILES OFF BILOXI, MISS.

From April 1 to November 30, 1894, 18 vessels were disinfected and 23 were inspected and passed.

On these infected vessels there were 16 cases of yellow fever at Rio de Janeiro and 4 deaths therefrom, and 2 cases at Santos with 1 death at sea.

REPORT OF THE MEDICAL OFFICER IN COMMAND.

GULF QUARANTINE, SHIP ISLAND, MISSISSIPPI, *August 16, 1894.*

SIR: In reply to Bureau circular letter of the 9th instant (H. W. A.), I have the honor to submit the following report of the operations of the quarantine service at this station during the fiscal year ended June 30, 1894:

Eighty-eight vessels were handled during this period. Of these 55 were disinfected and 33 inspected and passed. Three vessels were detained temporarily for not having a United States consular bill of health, and the fact reported to the Bureau and the collector of customs of this port. Three cases of yellow fever were treated in hospital, all ending in recovery.

The following is a list of noninfectious diseases treated in hospital:

Malarial fever, remittent	10
Pneumonia, lobar	1
Diarrhea	1
Tubercle of lung	1
Incised wound of thorax	1

The station was partially destroyed by a hurricane on the 1st of October, 1893, and was at once removed to Ship Island, occupying the old and half-ruined buildings erected by the National Board of Health.

On the 10th of June, 1894, the disinfecting barge *Zamora* arrived at the station, thus completing the disinfecting plant.

Very respectfully,
G. M. GUITÉRAS,
Passed Assistant Surgeon, Marine-Hospital Service.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

GULF QUARANTINE,
Ship Island, Mississippi, August 16, 1894.

SIR: In compliance with Bureau circular letter of the 9th instant (H. W. A.), directing that a separate report be transmitted of all alterations and repairs made at this station during the fiscal year ended June 30, 1894, and a statement made of the repairs and alterations required during the current fiscal year, I have the honor to submit the following statement of alterations, etc., made during the fiscal year ended June 30, 1894:

Two footbridges, one connecting the medical officers' quarters with the office building, the other connecting the main station with the beach of Chandeleur Island.

Buildings given a coat of paint. A disinfecting plant erected on the pier head. Wire window screens and doors purchased for office, medical officers' quarters, and steward's quarters.

On the removal of the station to Ship Island, after the hurricane of October 1, repairs were made by the hospital attendants to the buildings which were there occupied for quarantine purposes. The injuries sustained by the fumigating steamer *Welch* during the storm were also repaired. In April and May, 1894, the *Welch* received more extensive repairs, the bichloride pump was practically renewed, the main shaft bearings reset, new steam pipes put in, etc.

The repairs and alterations required during the current fiscal year amount, practically, to the erection of a new quarantine station, with the exception of the disinfecting plant, which is at present quite complete.

Very respectfully,
G. M. GUITÉRAS,
Passed Assistant Surgeon, Marine-Hospital Service.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

The Gulf quarantine station has always been a refuge station, used by all the cities of the United States on the Gulf of Mexico east of the Mississippi River. This station, by act of Congress, March 5, 1888, was removed from Ship Island to Chandeleur Island, and on this account, after the destruction of the station at Chandeleur Island by storm, November 1, 1893, and the temporary removal of the quarantine station back again to Ship Island, it was deemed unlawful to make the latter a general refuge station without some authority of Congress. To supply the place of the disinfecting chamber which was destroyed by storm the barge *Zamora*, containing a steam disinfecting chamber, was towed from Wilmington, Del., to Ship Island by the Revenue-Cutter Service, and the old buildings on Ship Island were put in a condition fit for occupancy, and with the steamer *Welch*, which carries a sulphur fumigating furnace, the station was ready for the handling of infected vessels until Congress could legalize the establishment of the refuge station on Ship Island. The quarantine authorities at Mobile and Pensacola were informed that infected vessels arriving at their ports must be treated at their own quarantine stations. This caused discontent, particularly at Mobile, which had been sending all infected vessels and yellow-fever patients to the Gulf quarantine. In the appropriation act for 1895, however, Congress legalized the transfer of the Gulf Quarantine Station from Chandeleur to Ship Island, and the health authorities of the neighboring cities were immediately notified that all infected vessels and yellow fever patients might be sent to this last-named station.

SAN DIEGO QUARANTINE STATION, CALIFORNIA.

From November 30, 1893, to November 30, 1894, 101 vessels were inspected and passed, and 4 were spoken and passed.

REPORT OF THE MEDICAL OFFICER IN COMMAND.

NATIONAL QUARANTINE STATION,
San Diego, Cal., August 27, 1894.

SIR: In compliance with instructions contained in your circular letter (H. W. H.), of date August 9, 1894, I have the honor to submit herewith a report of the operations of the quarantine service at this station for the fiscal year ended June 30, 1894:

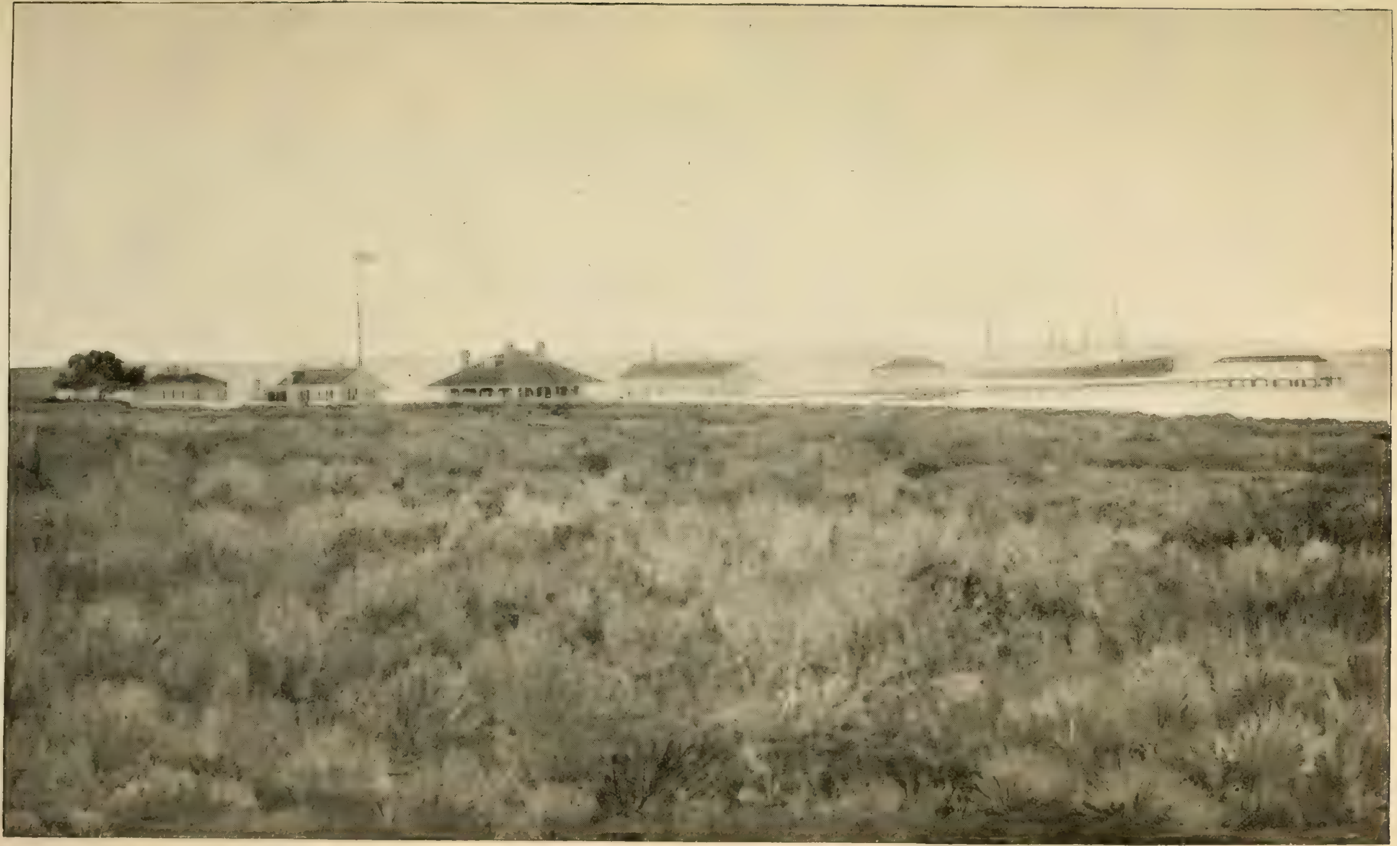
During the above-mentioned period there arrived at San Diego Quarantine Station from foreign ports 87 steamers and 26 sailing vessels, a total of 113 steam and sail, which were duly boarded, inspected, and passed. Their ports of departure were Panama, Acapulco, Mazatlan, Ensenada, Newcastle, Cardiff, Swansea, London, Liverpool, and Nanaimo.

Early in the year the Pacific mail steamers ceased to touch at this point on account of the annulment of the Government mail contracts. This has served to greatly reduce the yearly average of foreign arrivals.

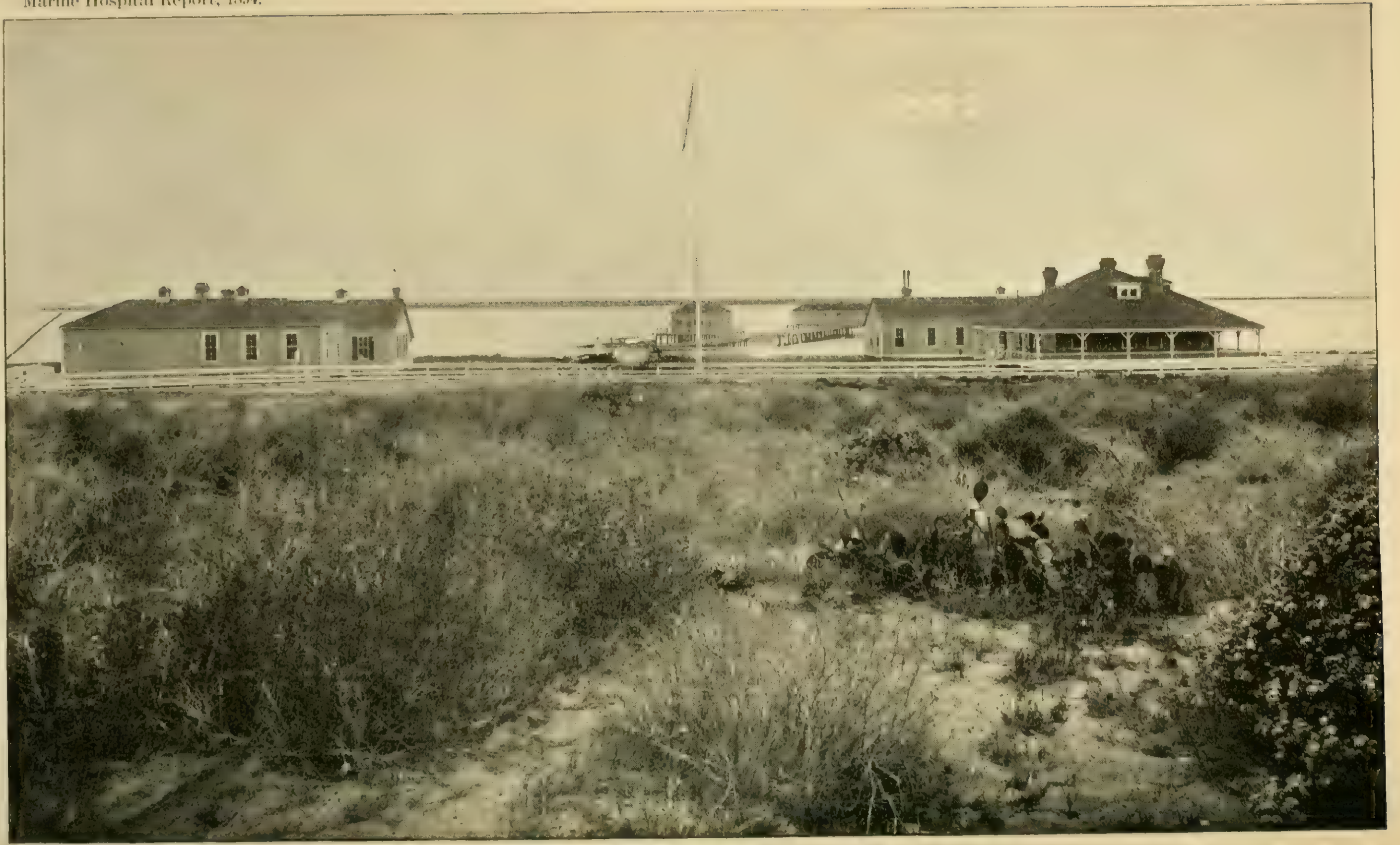
The buildings of the station as completed in July, 1893, consisted of surgeon's quarters, a cottage hospital, men's quarters, boatmen's quarters and boathouse, and a warehouse on the wharf for the reception of fumigating plant.

In October, 1893, a laundry and coal room was completed, the building being 21 feet by 56 feet 6 inches, placed on a foundation of 24 piles 10 inches in diameter driven in the sand 6 feet deep, the front or laundry room being 21 feet by 30 feet 6 inches, and supplied with a battery of stationary washtubs and a Wilks hot-water heater capable of heating 120 gallons of water to the boiling point every hour.

The coal room in the rear of the laundry building is 21 feet by 25 feet 9 inches, which gives ample storage capacity for fuel. Within the past year the quarantine grounds have been inclosed with a good, substantial board fence, the grounds graded, and about 1,200 feet of good, heavy 2-inch board sidewalk laid. The work of building the sidewalk and fence, as well as a portion of the work of grading, was done by the employees, of whom there are three available for this class of work when they are not engaged in the performance of the regular duties of the station.



U. S. QUARANTINE STATION, SAN DIEGO, CALIFORNIA. (VIEW I.)



U. S. QUARANTINE STATION, SAN DIEGO, CALIFORNIA. (VIEW II.)

A contract has been let for the construction of a disinfecting plant, to be placed in the warehouse on the wharf. The machinery will consist of a steam disinfecting chamber, sulphur furnace, bichloride tanks, engine, pump, blower, etc. On account of the almost constant prevalence of smallpox in Mexican coast ports and the towns tributary thereto, it is as essential that a winter inspection service should be maintained for vessels touching at those ports as it is during the summer. This station was supplied with a 35-foot 10-horsepower naphtha launch last January. She was built by the Gas Engine and Power Company, of Morris Heights, N. Y.. and shipped by rail to San Diego. She has given entire satisfaction, is economical of fuel, and has been of great service in enabling us to transact the business of the station promptly. She is considered indispensable, the saving of the cost of transportation of supplies, etc., alone being almost sufficient to pay for the cost of naphtha consumed. Too much can hardly be said in praise of her worth and efficiency.

The past two years having been practically years of drought, it was deemed advisable to cut away the dense growth of brush immediately surrounding the station. This brush had become very dry and inflammable. Accordingly, the employees were set to work clearing a strip of the Government reservation extending around the quarantine grounds 100 feet in width without having previously obtained permission from the War Department to do so.

In the very near future San Diego quarantine station is destined to become a refuge station for most, if not all, vessels engaged in commerce between Mexican and Central and South American Pacific coast ports and the United States; also infected vessels arriving at Wilmington, San Pedro, Santa Monica, and Redondo would have to be remanded here for disinfection, so that this station is not only a protection to the people of San Diego, but to the city of Los Angeles, as well as the entire southwestern portion of the State of California.

The following is a report of repairs and alterations made in buildings, grounds, and quarantine vessels at the National Quarantine Station, San Diego, Cal., during the fiscal year ended June 30, 1894:

For materials for painting wire-screen doors of buildings and for cement and materials for protecting wooden piling at shore end of gangway to wharf from ravages of teredo	$13.45
For materials for repairs and alteration stairway and boathouse landings	10.00
For repairs and alterations to down spouts of buildings	25.00
For repairs to plumbing and for placing four 100-gallon galvanized iron tanks in buildings to relieve plumbing of heavy pressure	108.50
For repairs and alterations to flues to obviate defective working cooking ranges	34.80
For emergency repairs to plumbing before tanks were put in	19.75
For materials for repainting boats and repair of davits	24.00
Total	235.50

Very respectfully,

W. W. McKay,
Acting Assistant Surgeon, Marine-Hospital Service, in Charge.

Surgeon-General Marine-Hospital Service,
Washington, D. C.

SAN FRANCISCO QUARANTINE, ANGEL ISLAND, CAL.

For a full description of this station see Annual Report for 1892. The boarding of vessels arriving at San Francisco has been done by the local quarantine officer. The medical officer in command of the station states that no infected vessels have been received there for disinfection. The following is his report upon the repairs made during the year:

NATIONAL QUARANTINE STATION,
San Francisco, Cal., August 17, 1894.

SIR: In reply to Bureau letter (H. W. A.) of the 9th instant, directing me to make a report of all alterations and repairs which have been made at my station during the fiscal year ended June 30, 1894, and a statement of repairs and alterations which in my opinion will be needed during the current fiscal year, with an estimate of the cost thereof, I have the honor to state that the roofs of all the buildings were painted with metallic paint; the boathouse, Chinese barracks, pump house, and old cottage were painted; a water-closet was built in the rear of the Chinese barracks with water and sewer connections; that a 12-strand barbed-wire fence was built around the reservation; two water-closets were put in the barracks building with water and sewer connections; that a roof was made over the deck of the U. S. S. *Omaha*, additional berths made, and tanks from the hold were placed, one on the forward and one on the after deck, for flushing water-closets; walls of rooms in barracks building and lazaretto were painted; a small wharf was built near the lazaretto, and that the old cottage was reshingled.

Respectfully, yours,
C. T. PECKHAM,
Passed Assistant Surgeon, Marine-Hospital Service.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

PORT TOWNSEND QUARANTINE.

From November 30, 1893, to November 30, 1894, 115 vessels were inspected and passed.

The following is the report of the acting assistant surgeon in charge of the station until relieved by P. A. Surg. W. G. Stimpson, September 27, 1894:

PORT TOWNSEND QUARANTINE,
Port Townsend, Wash., September 22, 1894.

SIR: In reply to circular letter (H. W. A) dated August 9, 1894, directing me to forward a report of the operations of the quarantine service at this station during the fiscal year ended June 30, 1894, I have the honor to state that during that period 89 foreign vessels were boarded, inspected, and passed.

There were no cases of contagion during the year.

The British ship *Hilston*, forty-three days from Shanghai, arrived November 17 with two or three sailors complaining, and having no bill of health she was detained in quarantine two days. Discharged on 19th, all well.

During the year the hospital ship *Iroquois* was housed over by a good substantial roof preparatory to any possible emergency pending the completion of the permanent station.

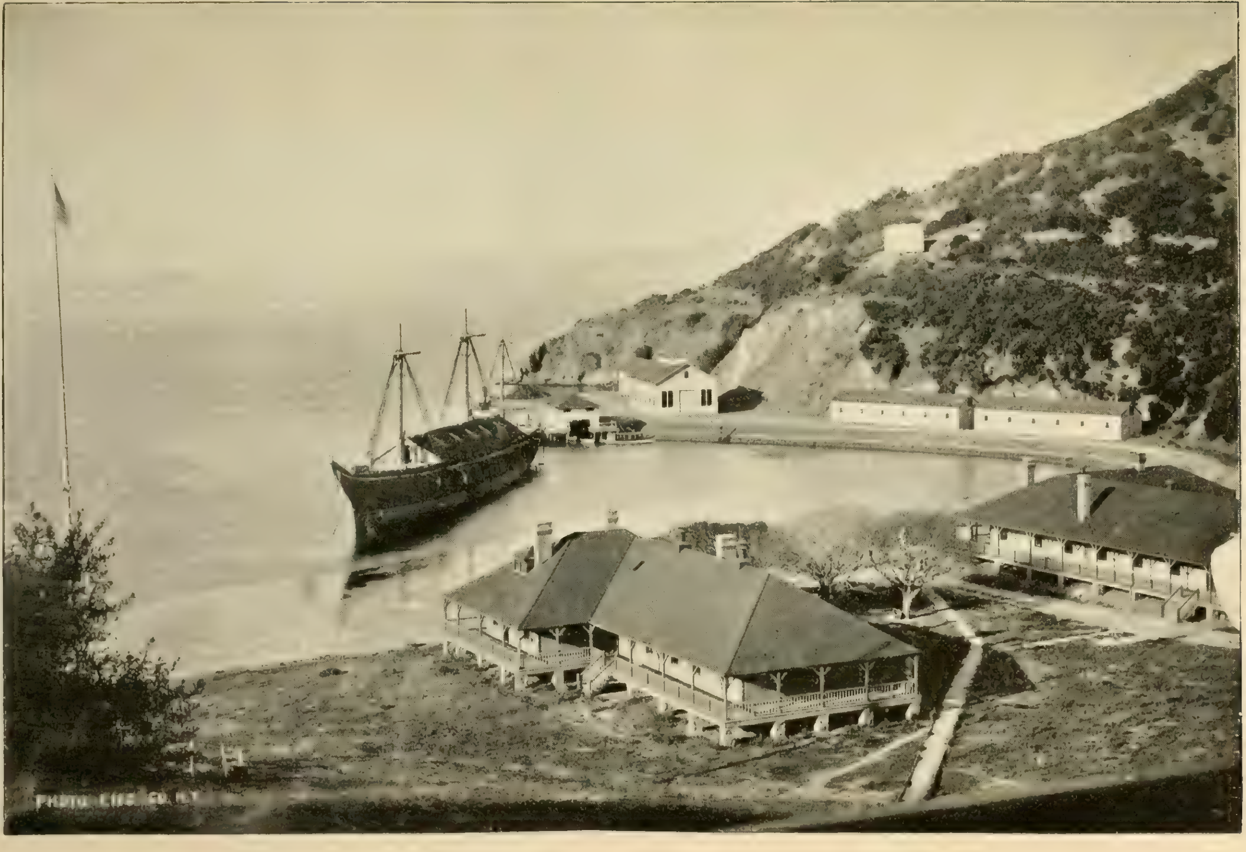
Ten acres of land were cleared of timber at Diamond Point and buildings erected thereon, namely, a surgeon's quarters, hospital, attendants' and detention quarters, a substantial wharf and warehouse, and water tank; also a tank house containing two large water tanks contiguous to main buildings.

February 1 a keeper was employed to take care of the buildings and grounds, to prevent depredations and fires, and to look after the station and property generally.

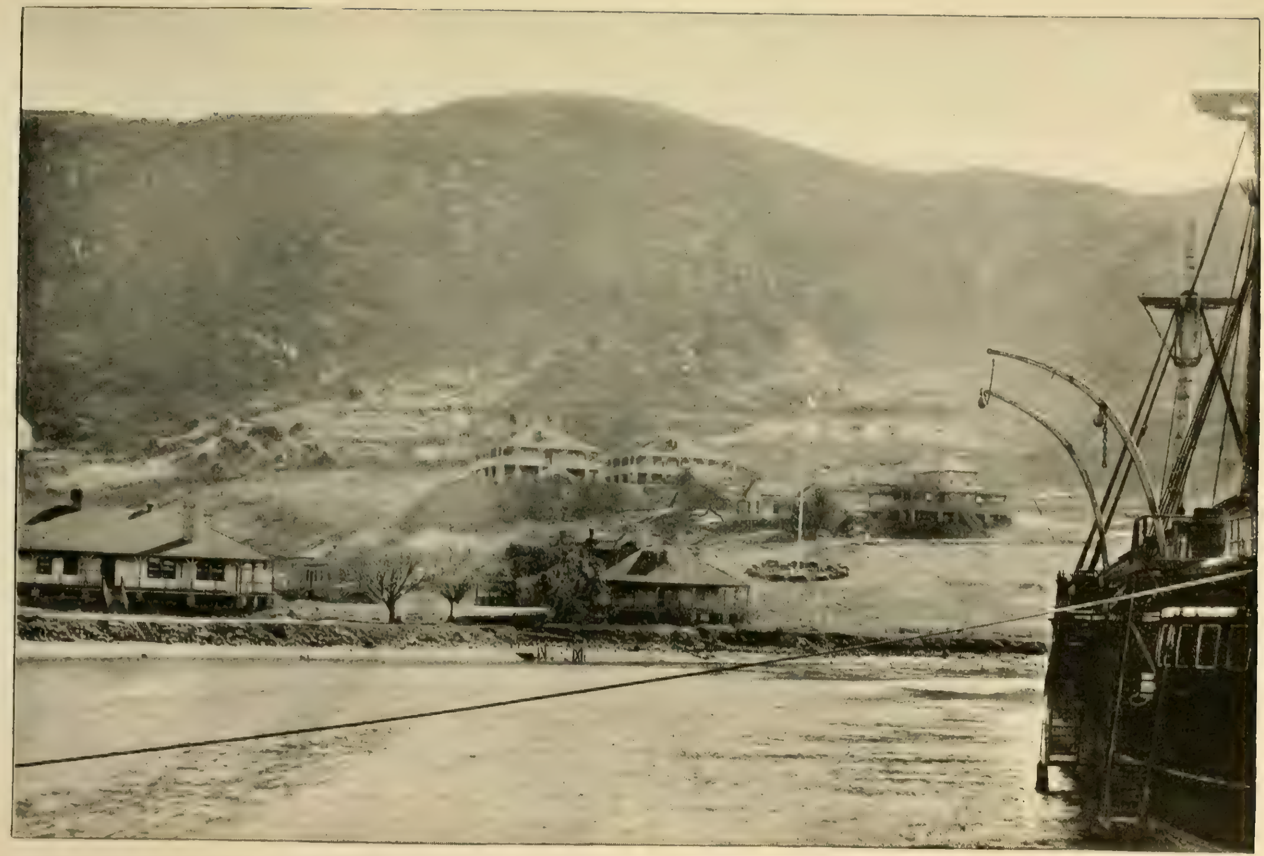
I have the honor to be, very respectfully, your obedient servant,

S. B. CONOVER,
Acting Assistant Surgeon, Marine-Hospital Service, in Charge.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.



U. S. QUARANTINE STATION (SAN FRANCISCO), ANGEL ISLAND, CALIFORNIA. (VIEW I.)



U. S. QUARANTINE STATION (SAN FRANCISCO), ANGEL ISLAND, CALIFORNIA. (VIEW II.)

PORT TOWNSEND QUARANTINE,
Port Townsend, Wash., September 24, 1894.

SIR: In reply to circular letter dated August 9 (H. W. A.), directing me to make a report of alterations and repairs made during the fiscal year ended June 30, 1894, and a statement of those needed during the current year, with estimate of cost, I have the honor to state that a roofing was placed over the *Iroquois* at a cost of $1,525, and 8 port holes and 10 scupper holes stopped on the *Iroquois* at a cost of $20; also repairing to the hand pump on the *Iroquois* at a cost of $16.60.

Alterations and repairs for the current year can hardly be anticipated or estimated pending permanent construction. If, however, the contemplated necessary improvements are included under this head, I estimate the disinfecting plant to cost $6,000; waterworks and appliances, $4,500; necessary additional outbuildings, $250; a limited amount of furniture and utensils for different quarters, $500; small boat for station, $175; grubbing and preparing grounds, $500, and probable necessary incidental expenses not foreseen, $500.

I have the honor to be, very respectfully, your obedient servant,

S. B. CONOVER,
Acting Assistant Surgeon, Marine-Hospital Service, in Charge.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
Washington, D. C.

Since the date of the above report a regular medical officer of the Marine-Hospital Service, P. A. Surg. W. G. Stimpson, has been placed in charge of this station and contracts have been made for the installation of the disinfecting plant.

APPROPRIATION FOR A UNITED STATES QUARANTINE STATION AT SOUTHPORT, N. C.

As a result of the inspection of the quarantine stations on the North Carolina coast the entire absence of a proper quarantine for the port of Wilmington, N. C., was brought to the attention of the Bureau, and the following letter pertaining to the subject was received from the president of the State board of health of North Carolina.

NORTH CAROLINA BOARD OF HEALTH,
Raleigh, N. C., May 25, 1894.

DEAR SIR: After a conference with P. A. Surg. J. J. Kinyoun, representing yourself and the Service, the North Carolina board of health, at its recent meeting, on the 16th instant, in the city of Greensboro, unanimously passed the following motion:

"*Moved*, That in view of the inability or unwillingness of the city of Wilmington to contribute its part toward carrying out the act of the last general assembly providing for the erection of a first-class quarantine station at Southport, the secretary be instructed to officially request the United States Marine-Hospital Service to take charge of and operate that station; and that the secretary be authorized to explain this action on the part of the board."

In obedience to the instructions above given I hereby officially request you, as representing the United States Marine-Hospital Service, to take charge of and operate the quarantine station at Southport.

Should you accede to our request, thereby bringing your Service into closer relations with our board, we feel that we can count with confidence upon a continuance of the same cordial spirit of cooperation that has always existed between us.

In explanation of the action of the board I would say: Dr. George G. Thomas, a member of our State board of health and secretary of the board of quarantine of the port of Wilmington, N. C., realizing the importance of a first-class quarantine station at the mouth of the Cape Fear, has been working for it for many years.

At the last session of the general assembly, in 1893, ably assisted by Dr. T. S. Burbank, of the board of quarantine, and others, and by the cholera scare, he succeeded in obtaining an appropriation by the State for that purpose of $20,000, conditioned, however, upon its being supplemented by an appropriation to the same object of $5,000 on the part of the city of Wilmington. The board of aldermen of that city at a recent meeting declined to make the appropriation and appointed a committee to confer with you on the subject.

While the sentiment of the State board of health is in favor of local control as far as practicable, it was, as above stated, unanimous in the opinion that under existing circumstances it would be best for you to take charge of that station. We trust you can do so.

The board regretted your inability to be present in person, but as that could not be they appreciated your sending as your representative, in response to our invitation, one so agreeable and so entirely acceptable in every way as Dr. Kinyoun.

Hoping that we may look forward to the pleasure of having you with us at some meeting in the near future, I am,

Very respectfully, yours,
RICH'D H. LEWIS, M. D.,
Secretary.

WALTER WYMAN, M. D.,
Surgeon-General Marine-Hospital Service, Washington, D. C.

As a result of the efforts made to correct this quarantine deficiency on the Atlantic Coast, an appropriation was made by Congress in the sundry civil appropriation bill approved August 18, 1894, granting $25,000 for the erection of a quarantine station at or near Wilmington. A board of officers, consisting of P. A. Surg. J. H. White, First Lieut. William H. Roberts, of the Revenue-Cutter Service, and Dr. George G. Thomas, of the State board of health, was appointed to select the site. They have selected a point in the river about 1 mile from Southport and about 25 miles from Wilmington. Plans and specifications have been prepared, and it is expected that the station will be ready for service during the ensuing quarantine season.

REVIEW OF QUARANTINE CONSTRUCTION AND EQUIPMENT DURING THE PAST THREE YEARS.

It may be of interest to give a brief review of the work accomplished by the Marine-Hospital Bureau during the past three years in the selection of quarantine sites, the erection of piers and buildings, construction of disinfecting apparatus, and other details of equipment. The difficulties attending the establishment of a quarantine station are great. The requirements for a proper site are numerous, including remoteness from inhabited districts, accessibility, sufficient anchorage, water supply, etc., and the difficulties are invariably enhanced by local fears and the protests of owners of adjoining property, who imagine that its value will be impaired. Sandy Hook, New Jersey; Reedy Island, Delaware; Fishermans Island, Virginia; Waynesville, Ga.; Ship Island, Mississippi, and Diamond Point, Washington, are stations selected, purchased, or otherwise obtained possession of during the period mentioned.

SUMMARY OF CONSTRUCTION, ETC.

CAMP LOW, SANDY HOOK.

Barracks, hospital, immigrants' bath house, laundry, and other buildings; two steam disinfecting chambers.

DELAWARE BREAKWATER.

Barracks, immigrants' bath house, steward's quarters, laundry building, steam disinfecting chamber, artesian well, etc.; barge *Zamora* purchased and fitted with complete steam disinfecting plant; reservation fenced in.

REEDY ISLAND.

Pier and warehouse, with observation tower; two steam disinfecting chambers; sulphur fumigating furnace; telegraphic cable laid; boarding vessel purchased.

CAPE CHARLES.

Wharf and gangway, warehouse, barracks, kitchen, dining room, laundry, and steam disinfecting chamber. At boarding station (Old Point Comfort) naval vessel *Jamestown*, obtained from Navy Department, provided with a deck house, steam disinfecting chamber, etc. Boarding vessel purchased.

SOUTH ATLANTIC.

New wharf and warehouse, steam disinfecting chamber, sulphur fumigating furnace, artesian well, etc.; boarding vessel provided.

KEY WEST.

Iron wharf, warehouse, steam disinfecting chamber, sulphur fumigating furnace; boarding vessel purchased.

GULF.

New pier, warehouse, steam disinfecting chamber.

SAN DIEGO.

Pier and gangway, warehouse, officers' quarters, boathouse, laundry, attendants' quarters; boarding vessel purchased; steam disinfecting chambers contracted for.

SAN FRANCISCO.

Barracks; reservation fenced in; naval vessel *Omaha* secured from the Navy Department and fitted up for reception of detained passengers.

PORT TOWNSEND.

Wharf, warehouse, barracks, and other buildings; naval vessel *Iroquois*, transferred from the Navy Department, housed over for detention of passengers; disinfecting machinery contracted for.

BRUNSWICK.

Steam disinfecting chamber and sulphur fumigating furnace contracted for.

Within the period named it will be seen that the Bureau has provided as many as eighteen steam disinfecting chambers, two of which, however, at the present writing, although contracted for, are not yet in position, namely, those at San Diego and Port Townsend. The steam chambers are located as follows:

Camp Low	2
Delaware Breakwater	1
Reedy Island	2
Fishermans Island	1
The *Jamestown*	1
South Atlantic quarantine	1
Brunswick, Ga	1
Key West, Fla	2
Gulf quarantine	1
San Diego	1
Port Townsend	1
Waynesville, Ga. (temporary)	1
Barge *Zamora*	1
Portable chamber	2
Immigration station, Ellis Island [1]	1

These chambers, of the most modern and improved type, were designed by an officer of the Service, who made a special study of steam disinfection while in Europe, and to whose ingenuity much of the improvement in steam disinfection at the present time is due.

IMPROVED STEAM DISINFECTING CHAMBERS DESIGNED AND CONSTRUCTED UNDER THE SUPERVISION OF THE BUREAU.

The following description is furnished by the designer, P. A. Surg. J. J. Kinyoun:

The steam disinfecting chambers now in use at the several quarantine stations are constructed on the following plan:

The chamber is rectangular in shape, to give the most effective space during exposure with greatest economy of steam. It is constructed of an inner and an outer steel shell, forming a steam jacket, with cast-iron end frames, intermediate truss bands, and screw-stay construction.

The doors have concave steel plates riveted to cast angle frames, fitted with steam-tight gaskets, and are handled by convenient cranes, being drawn tight by drop-forged steel eyebolts, swinging in and out of slots in the door frames.

The jacket gives a perfect circulation, prevents to a great degree condensation, and dries thoroughly the goods exposed. This jacket is filled with steam during the entire operation, making the chamber a drying oven, so that the articles to be disinfected are heated before the admission of steam to the inner chamber, and are dried at the end of the process.

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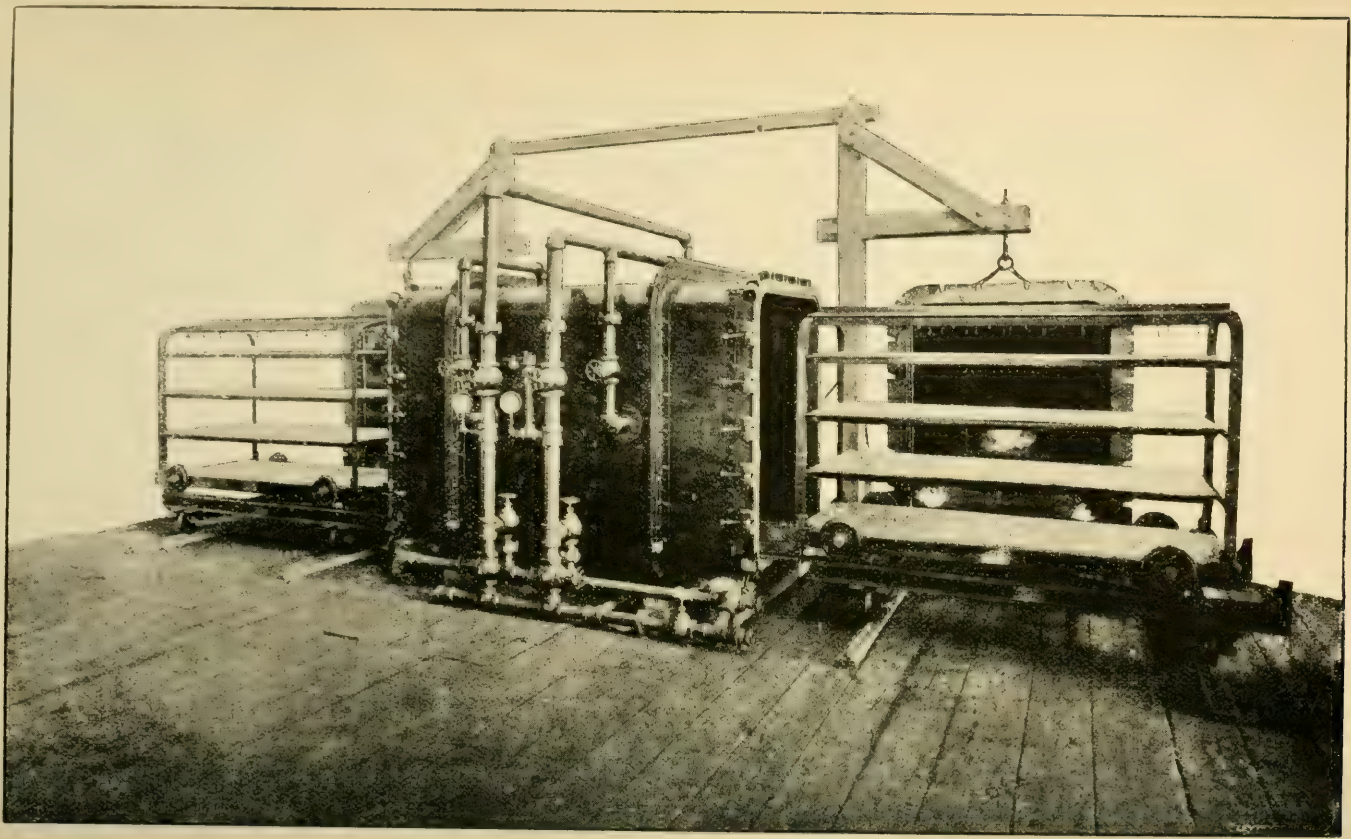
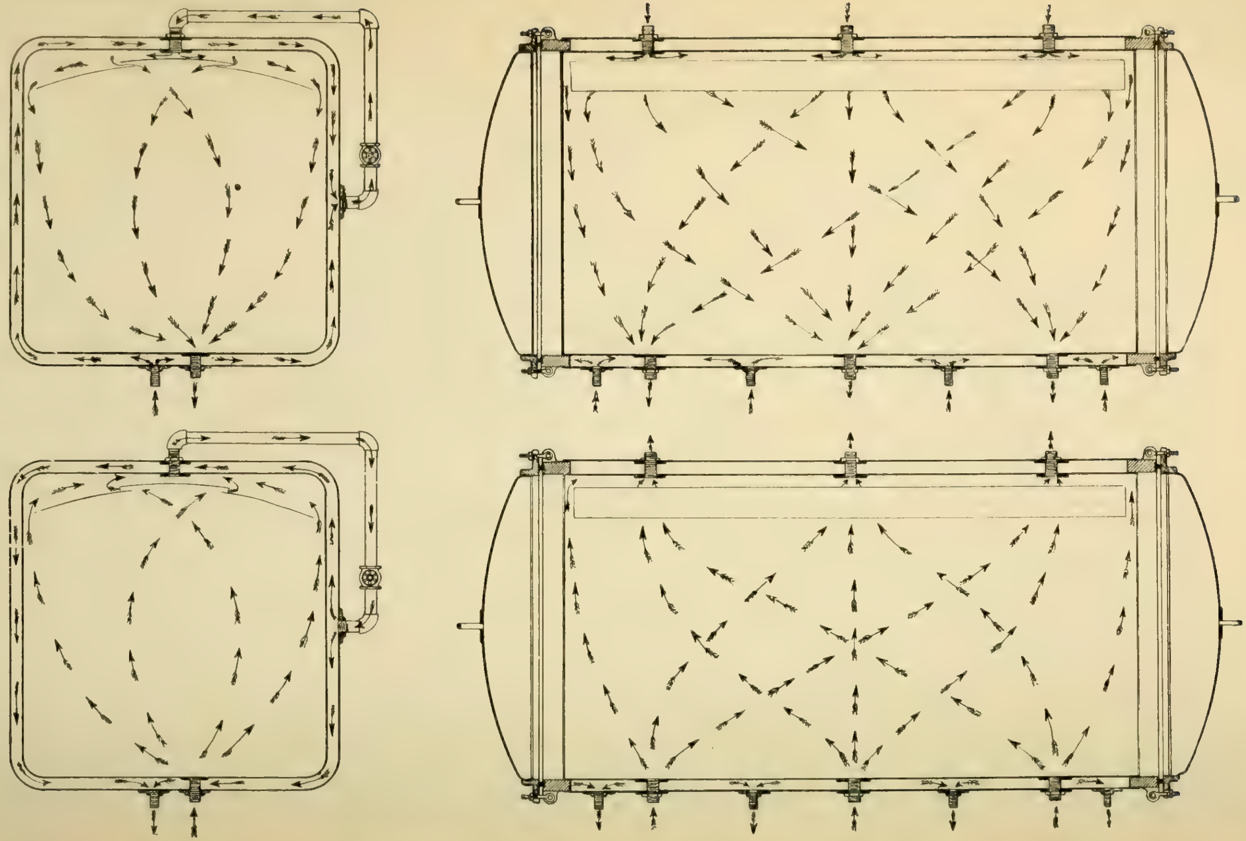
[1] Constructed by the Bureau for the World's Columbian Exposition and donated to the medical division of the immigration station at Ellis Island.



STEAM DISINFECTING CHAMBER (SMALL SIZE).



STEAM DISINFECTING CHAMBER, SHOWING CURRENTS OF STEAM. (See page 225.)

The chamber is also provided with a galvanized hood at its top, to prevent steam impinging directly upon the clothing; thermometers to register the temperature; gauges to indicate both vacuum and steam pressure, and safety valve to prevent overpressure in the chamber, the amount of pressure and temperature being regulated by a reducing valve in steam pipe from the boiler.

For convenience of handling the goods cars are provided of light wrought-iron construction, with removable trays, covered with galvanized screens and having bronze hooks at the top, permitting the articles to be laid out upon the trays or to be hung upon the hooks.

The doors at both ends allow the cars to be brought in at one end and removed at the other, thus securing complete isolation of the infected and disinfected articles. The cars, upon being unloaded, are returned to the working end of the chamber by means of transfer tables.

The system of piping is so arranged as to give thorough control of circulation. Steam may not only be admitted at the top or bottom at will, but may also be admitted at either end, on top, and discharged at opposite end on bottom, or vice versa, so that cross currents are obtained and the steam handled in any manner suited to obtain the best results from the articles being exposed.

The working of such a sterilizing chamber may be described as follows: The steam is generated in the boiler at high pressure and, by means of a reducing valve, is led to the chamber at the reduced pressure desired and allowed to circulate in the jacket.

While the jacket is being heated the infected goods are loaded upon the car; it is then pushed into the chamber, the door closed, and made steam and air tight.

When the thermometer indicates a temperature of 90° to 100° C. in the inner chamber, the vacuum is started and kept up until a negative pressure of 0.5 of an atmosphere is obtained. Then it is stopped and steam allowed to enter—slowly at first—and continued until there is a pressure of 0.5 of an atmosphere. The valves from the jacket are closed, while the vents are opened, so as to allow the steam to escape. The vacuum is again started and the above process is repeated. Then the steam is allowed to course through the chamber under about from 0.2 to 0.3 of an atmosphere, bringing into operation the alternating currents, so as to secure a full and perfect exposure of all parts of the articles to the current of steam. After about from seven to ten minutes close off the steam from the chamber proper, allowing it only to fill the jacket. The vacuum is again started, to remove any condensation which may have occurred.

The advantages of this chamber over others lie in its reliability, economy, simplicity, and convenience of working; the elimination of air by means of a pump; the thorough control of the steam and its direction of circulation; the large radiating surface in the jacket; the complete circulation of the steam, first through the jacket before entering the chamber; the use of steam of low pressure—little or no injury to the fabrics; thorough penetration of the articles by the current of steam.

The following is a copy of the specifications for the construction of a chamber 4 feet 4 inches by 5 feet 4 inches by 9 feet, together with the details with regard to cars and transfer tables:

SPECIFICATIONS OF STEAM CHAMBER, CARS, AND TRANSFER TABLES.

Chamber to be rectangular, with rounded corners, 6 inches and 3 inches radii, respectively, 4 feet 4 inches wide and 5 feet 4 inches high, inside measurement, 9 feet long, face to face of end frames.

To be constructed with an inner and an outer shell of five-sixteenths inch flange steel, having a tensile strength of not less than 55,000 to 60,000 pounds per square inch of section and an elongation of not less than 25 per cent measured in a space of 8 inches.

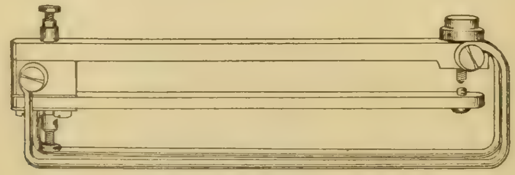
Reduction of area at point of fracture to be not less than 50 per cent. The said shells forming a steam jacket 2½ inches wide, strengthened by three-fourths inch steel screw stays, spaced as shown on drawing and supported by two braces extending around chamber, made of 5 by one-fourth inch flats, with two angles, each 2½ by 2½ inches, the bottom of braces to have additional 2½-inch angle bracing, as shown, to form supports of chamber. The end frames of chamber to be close-grained cast iron, free from seams or blowholes, 2½ inches thick, 7½ inches long, with lugs for 22⅝-inch steel eyebolts to fasten doors, and dovetail groove cored to hold pure gum packing ring 1 inch square, which is to be furnished and fastened in place. (Drawings Nos. 1 and 2.) The doors to consist of close-grained cast-iron frames, free from seams or blowholes, truly planed, to which are to be riveted five-sixteenths-inch flange steel plates curved to the radii of the chamber as shown, and to be fitted with straps, chains, and link for attachment to crane. Two ratchet wrenches to be furnished to quickly fasten eyebolts of door. The center of doors to be fitted with 1-inch pipe for thermometers. The chamber to have flanged openings as shown, for the several pipe connections, tapped true and straight, with standard pipe threads of the several sizes noted, and to be fitted with threefold hood of No. 18 galvanized sheet iron, securely held in place, extending full length of chamber and with the wrought-iron straps and bands necessary to hold nonconducting covering in place.

Cars.—The two cars to be 7 feet 6½ inches long, 3 feet 4 inches wide, and 5 feet high, each, of angle-iron construction, of shapes and sizes shown, supported by two pairs of cast-iron wheels 9 inches in diameter with 1¼-inch square axles, bottom covered by galvanized iron screens one-eighth-inch wire, 1-inch mesh, securely fastened in place, top to have three wooden bars of cypress to which are fastened 32 bronze wardrobe hooks, spaced alternately 8 inches apart. Three removable trays, framed of 1¾ by 1¾ inch angles, miter joints to be furnished for each car and covered by galvanized screens, the same as specified for bottom of cars, and to be supported by 1½-inch angles riveted to end of frames.

Transfer tables.—The two transfer tables to be 7 feet 7 inches long, to support track of 3-foot 7½-inch gauge and consist each of two 4-inch I-beams with four transverse braces of 3-inch angles, carrying two pairs of cast-iron grooved wheels 7 inches in diameter and diagonal bracing of 2 by one-half inch flats, as shown. The tables to be fitted with T-bar tracks and swing sections 18 inches long for chambers, the pins holding them in position on table to be fastened to beam by chain.

The details in connection with the steam chamber on board the disinfecting barge *Zamora*, with cut and explanations, have been furnished by the Kensington Engine Works, to illustrate the method of operating this particular chamber.

An electrical thermometer for indicating the temperature within the chambers has been devised and practically tested by Dr. Kinyoun. The accompanying cut and the description are sufficiently explanatory.



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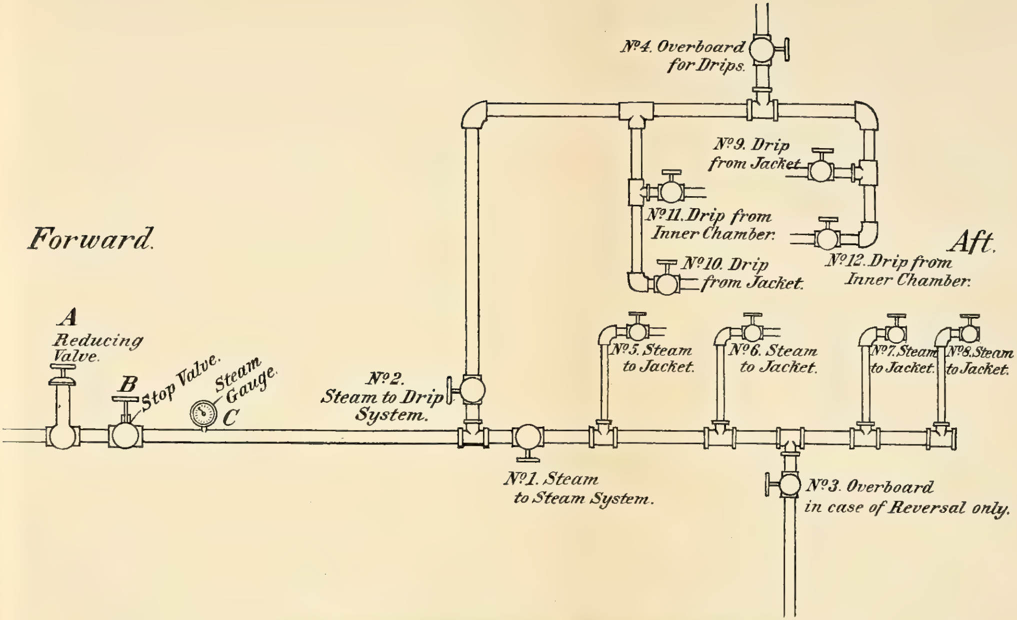


STEAM DISINFECTING CHAMBER ON BOARD BARGE ZAMORA—WORKING DESCRIPTION.

Nos. 13, 14, 15, and 16 are valves to admit steam to inner chamber situated on top of chamber and worked from side thereof.

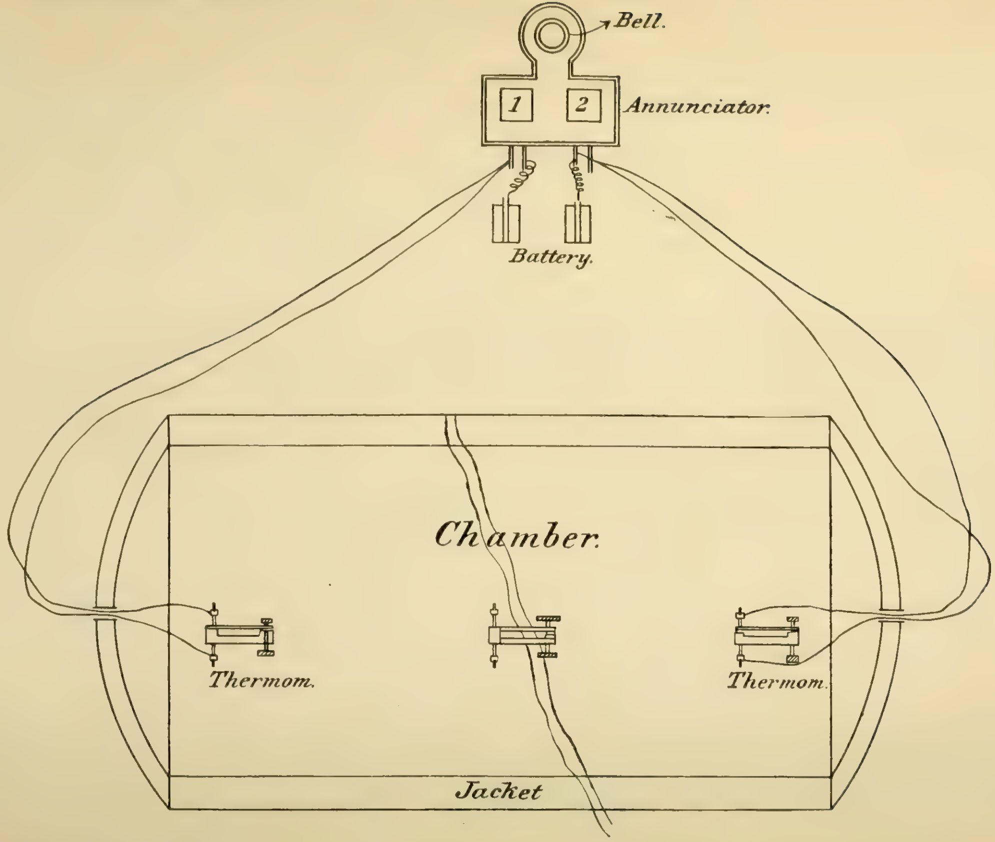
WORKING.

1. Adjust reducing valve A through stop valve B and steam gauge C to the required pressure—say, five to seven pounds.
2. Close valves Nos. 2 and 3.
3. Open valve No. 1, and then valves Nos. 5, 6, 7, and 8, very slightly at first, until the chamber is hot, then open full.
4. Open valves Nos. 4, 9, and 10; the steam will then be circulating through the steam jacket.
5. After door of chamber is closed, open valves Nos. 13, 14, 15, and 16 to admit steam to inner chamber. Open drip valves Nos. 11 and 12, and nearly close valves Nos. 9 and 10. The steam will then be circulating through the jacket and inner chamber, thence through drips.

TO REVERSE STEAM.

1. Close valves Nos. 1 and 4.
2. Open valves Nos. 2 and 3.

If reverse current is required only in jacket, close valves Nos. 13, 14, 15, and 16 and drips Nos. 11 and 12.
If reverse current is required in inner chamber, close valves Nos. 9 and 10.



SCHEME FOR INSTALLATION OF ELECTRIC THERMOMETERS IN STEAM DISINFECTING CHAMBERS.

ELECTRICAL THERMOMETERS FOR STEAM CHAMBERS.

The thermometer is of the kind known as "metallic," its operation depending on the expansion of a compound bar composed of metals of a dissimilar index of expansion under the influence of heat. The metals selected in the particular instrument under consideration are brass and zinc.

The compound bar is mounted on a frame of brass, and is secured rigidly at one end. The other end is free, and is furnished with a platinum-pointed set screw, for convenience of adjustment to the desired temperature. Situated in apposition to the adjustable set screw is another platinum-pointed screw, and by the contact of these points, produced by the expansion of the compound bar, the electrical circuit is completed and an alarm is sounded upon the bell of the indicator. Upon the fall of the temperature the bar contracts, the circuit is broken, and the ringing of the bell ceases. For the adjustment of wires for the conduction of the electric current binding posts are furnished and placed in position above and below the point on the frame where the compound bar is secured.

To set the thermometer.—The instrument is to be adjusted to the temperature of boiling water (100° C.), or a higher temperature may be indicated by making the adjustment in brine the temperature of which is observed by means of an ordinary mercurial thermometer. Connect the thermometer, by means of insulated wires, with the bell and the battery; immerse the thermometer in water or in brine and bring to boiling, observing by thermometer (mercurial) the attainment of the desired temperature. When this point is reached the set screw is to be adjusted to complete the circuit, and the instrument is now set for this temperature, and the screw can be secured in the position by a jamb nut.

The outfit for each steam disinfecting chamber consists of two metallic thermometers, two cells of Laclanche battery, an annunciator with two drops and an alarm gong or bell, together with 100 feet of insulated wire. It is suggested that the thermometers be placed in different parts of the chamber, as at one end near the door, and the other nearer the center of the chamber, and that the wires connected thereto be brought out of the thermometer openings at the center of the chamber doors, the openings around the wires being filled with cotton waste, tightly packed. One end of the chamber can be designated as No. 1 and the other as No. 2, and the annunciator and battery can be secured in a convenient position on the wall of the disinfecting shed. It is believed that the action of these thermometers will prove more satisfactory and reliable in practice than mercurial thermometers placed in the door openings of the chambers.

PORTABLE DISINFECTING APPARATUS.

At the conclusion of the Brunswick epidemic it became necessary to disinfect clothing, bedding, etc., taken from all suspected houses both in Brunswick and Jesup. For this purpose the steam disinfecting car which had been constructed by Surgeon Carter was taken first to Jesup and afterwards to Brunswick, and the work of disinfection thoroughly performed. In the performance of this duty, however, it became evident that a substantial portable steam disinfecting chamber and portable sulphur fumigating furnace should be possessed by the Marine Hospital Bureau, so that when called upon for assistance, particularly in localities unprovided with these appurtenances, prompt assistance might be given. Therefore an allotment from the epidemic fund was asked for and approved by yourself for the purpose of constructing said disinfecting apparatus. Both have been completed, and one, the steam disinfecting chamber, was immediately put into use after completion, being required in the city of Washington, which was unprovided with any steam disinfector, in suppressing the threatened epidemic of smallpox. A description of each apparatus follows:

PORTABLE STEAM DISINFECTOR.

Consists, as seen by cuts, of a beam frame mounted upon running gear, carrying the chamber, pump, coal and water tank, and the locker-box seat. The chamber is composed of double steel shells, with door at one end, handled by a crane attached to chamber itself, and has removable track, with stand adjustable for the irregularities of the roadway, with a galvanized car of size to take single or double mattresses.

The piping is arranged to give thorough control of the steam circulation, and has reducing valve, thermometer, vacuum and pressure gauges, and safety valve.

The boiler and pump are easy of access for working, and arranged as compactly as possible.

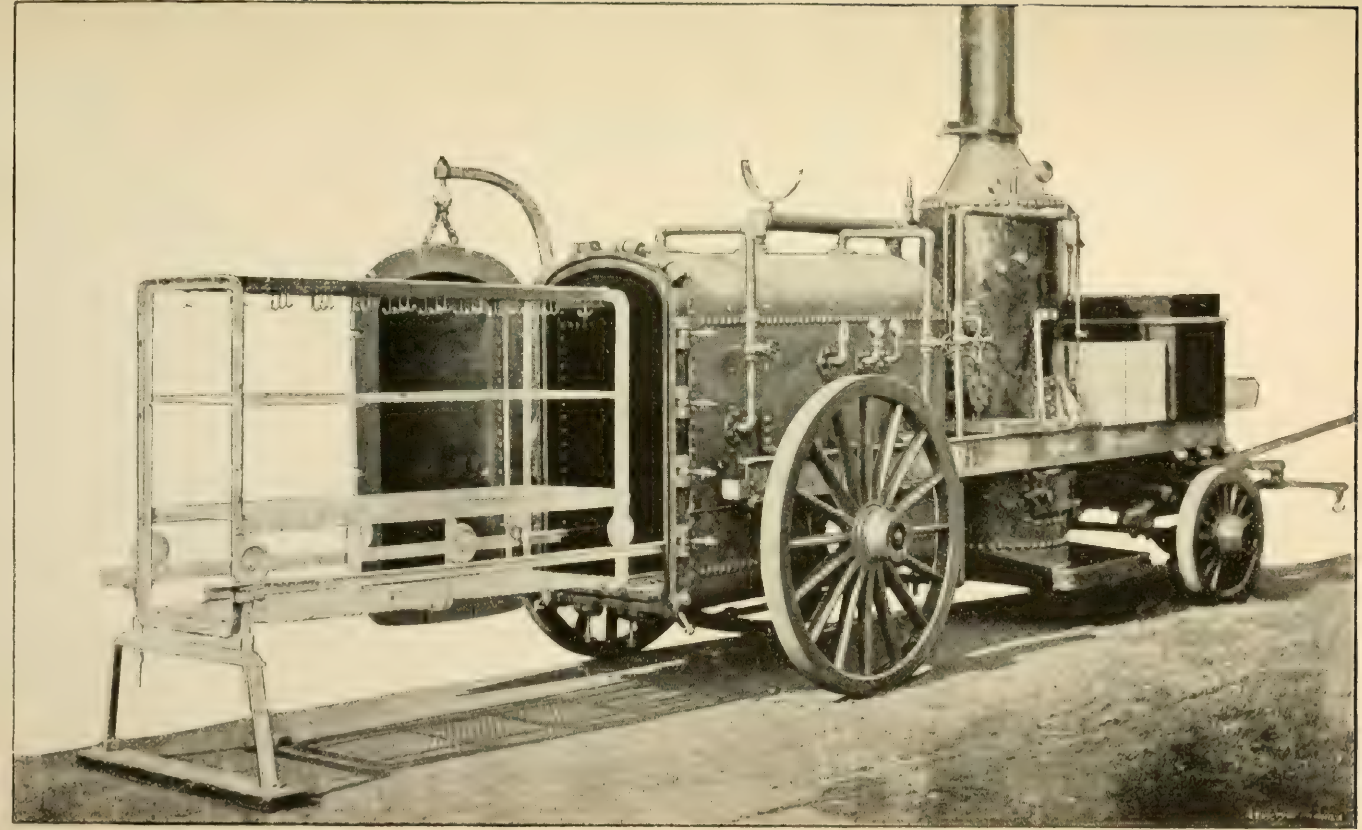
This apparatus may be kept at the hospital or other convenient place for stationary use, or hauled to infected district in case of epidemic.

PORTABLE SULPHUR FUMIGATOR.

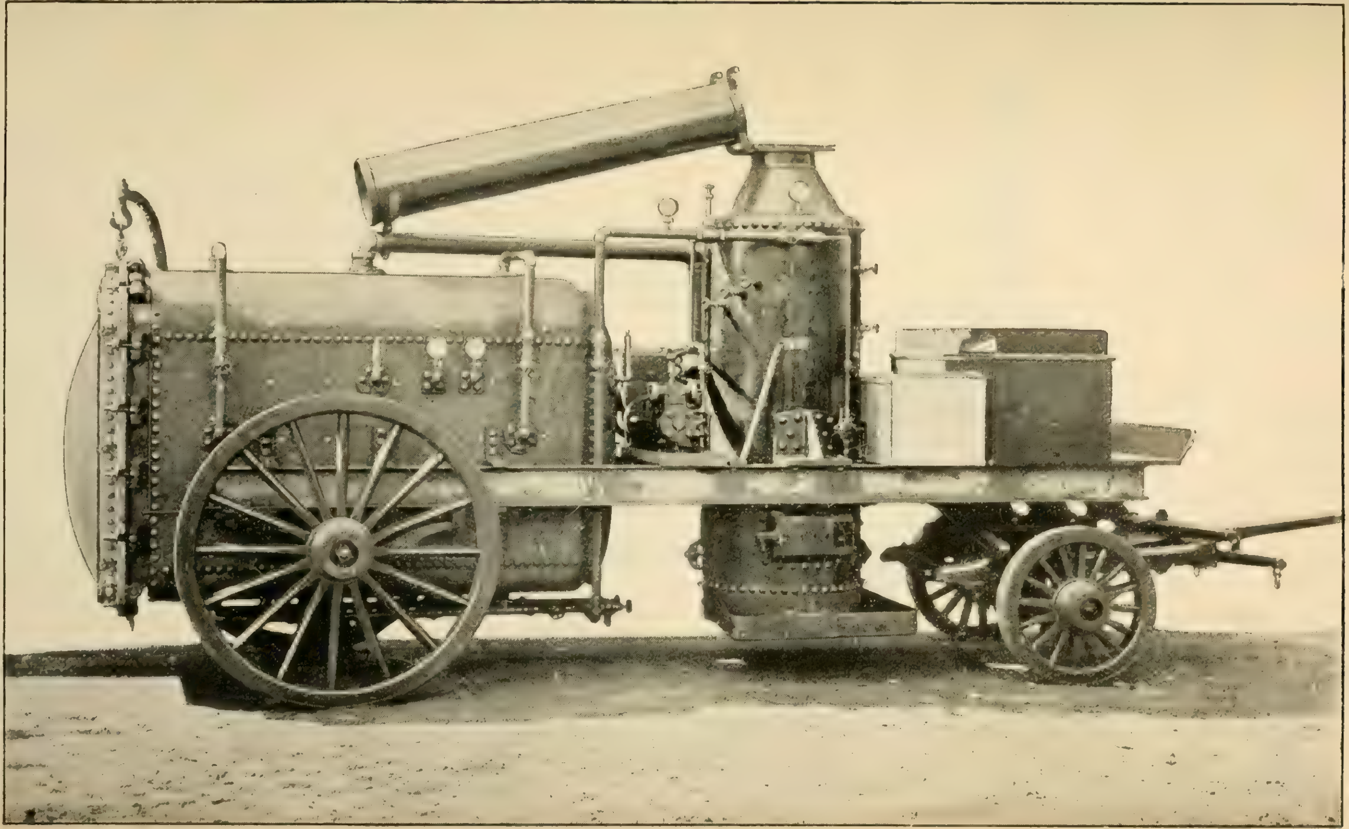
Consists, as seen by cuts, of a beam frame mounted upon running gear, carrying the furnace, boiler, engine, fan, coal and water tank, and locker box-seat.

The furnace is of special design, with fire and smoke box at one end, the sulphur being held in cast-iron pan, the dioxid fumes, upon being generated, traveling the full length of furnace and return, thence to reservoir on top, arranged with baffle plates, from which it is sucked by fan run by rapid-speed engine.

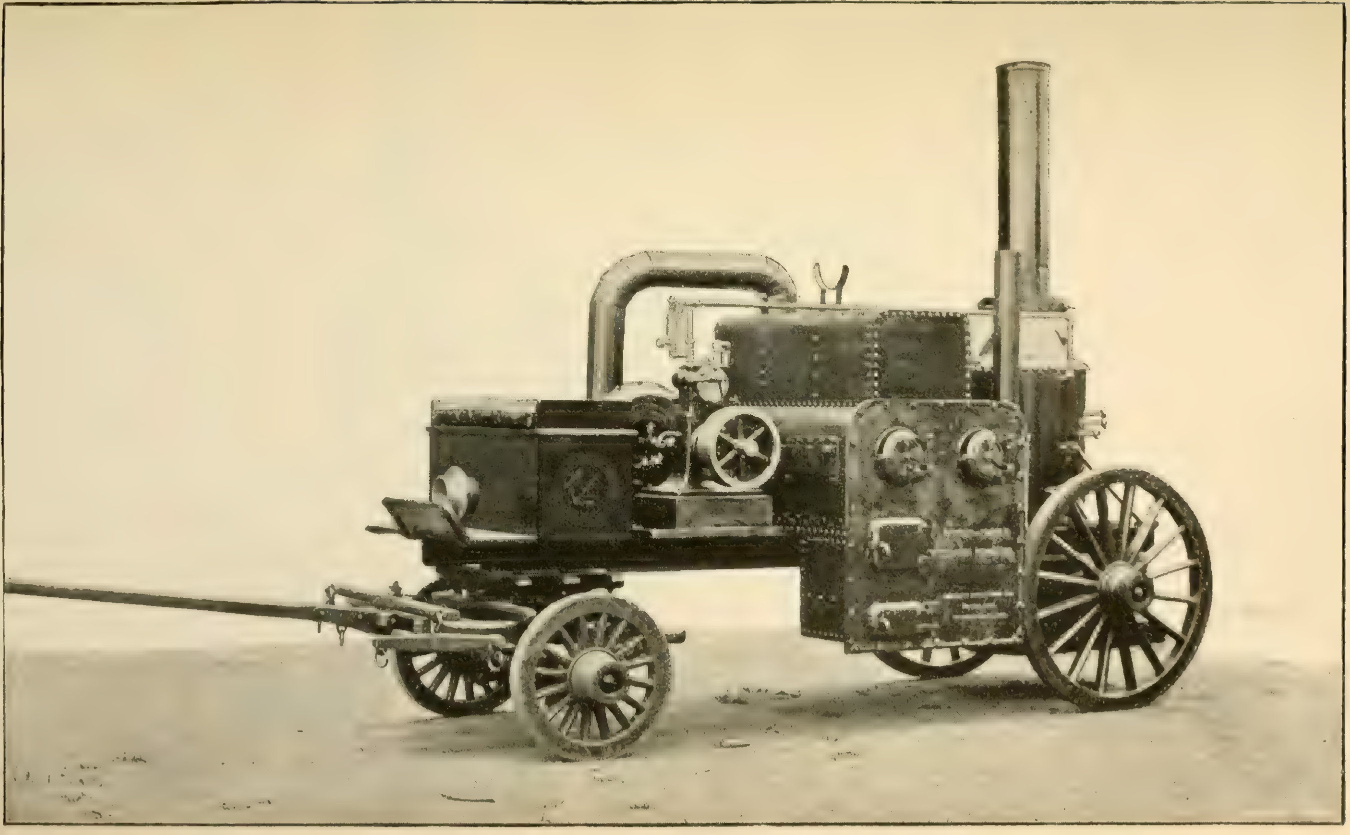
To continue the operation without opening the doors and causing rapid combustion, a double-winged stoker is provided, by which additional sulphur can be introduced into the pan. Two lengths of hose of special construction are also provided to convey the fumes into the building being fumigated.



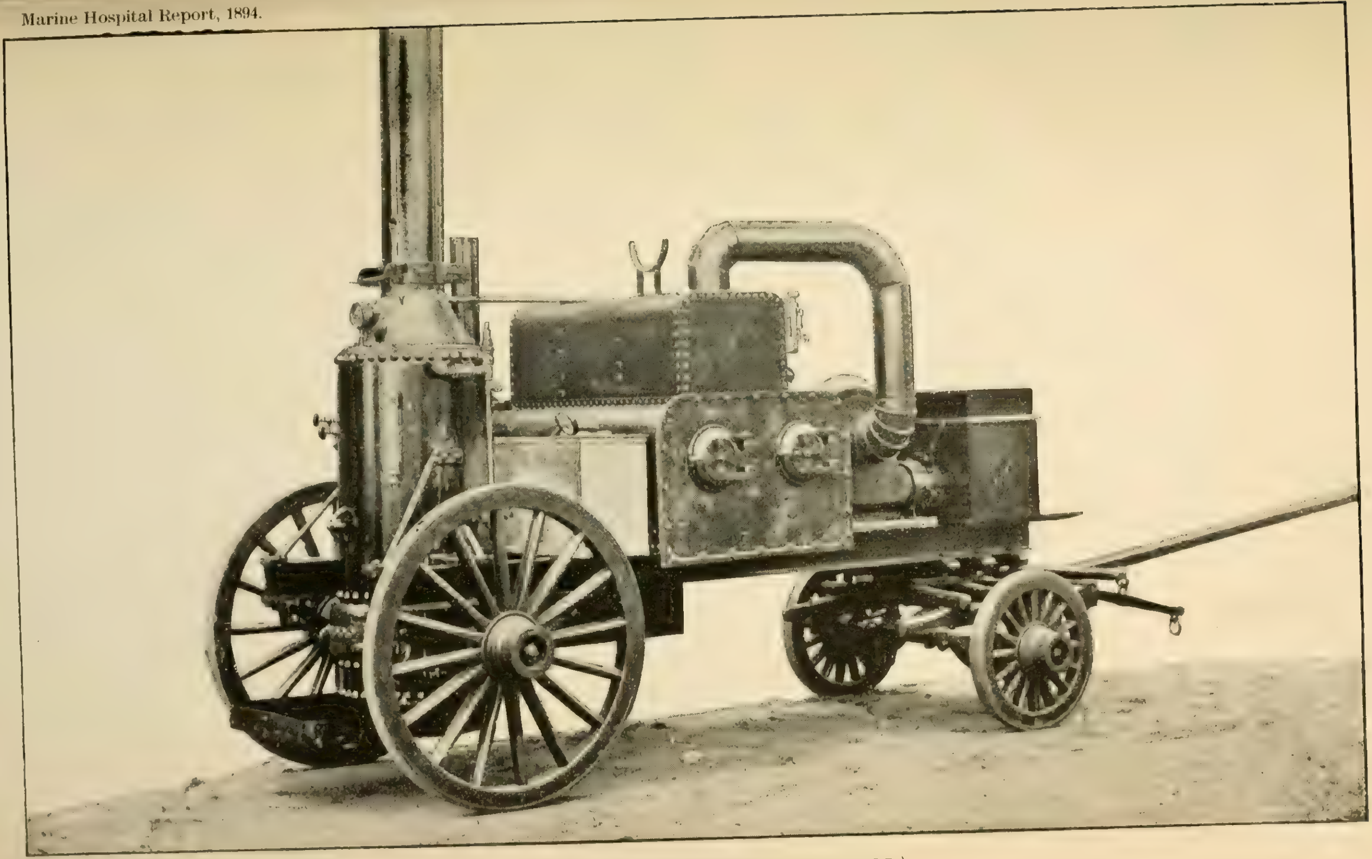
PORTABLE STEAM DISINFECTOR, KINYOUN-FRANCIS PATTERN, DESIGNED FOR U. S. MARINE-HOSPITAL SERVICE. (READY FOR SERVICE.)



PORTABLE STEAM DISINFECTOR, KINYOUN-FRANCIS PATTERN, DESIGNED FOR U. S. MARINE-HOSPITAL SERVICE. (CLOSED FOR REMOVAL.)



PORTABLE SULPHUR FUMIGATOR, KINYOUN-FRANCIS PATTERN, DESIGNED FOR U. S. MARINE-HOSPITAL SERVICE.



PORTABLE SULPHUR FUMIGATOR. (REAR SIDE.)

UNITED STATES QUARANTINE LAWS AND REGULATIONS.

REVISED REGULATIONS.

In the enforcement of the Quarantine Regulations of 1893, difficulty was experienced with regard to merchandise, and after mature deliberation I believed the Regulations could be modified in this regard and made less exacting without danger to the public health. Accordingly, with the assistance of a board of five medical officers, the Regulations were revised and promulgated as follows:

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
April 26, 1894.

To Officers of the Treasury Department,
Consular Officers, and others concerned:

Pursuant to the act of Congress approved February 15, 1893, entiled "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service," and other quarantine laws herewith published, the following regulations have been made and are hereby promulgated. The regulations to be observed at foreign ports shall take effect in said ports ten days after they have been posted in the office of the United States consul according to law, and all previous quarantine regulations to be observed in foreign ports will then cease to be operative. All previous United States quarantine regulations for domestic ports are hereby revoked.

J. G. CARLISLE, *Secretary.*

QUARANTINE LAWS OF THE UNITED STATES.

AN ACT granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service.

[Approved, February 15, 1893.]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be unlawful for any merchant ship or other vessel from any foreign port or place of [to] enter any port of the United States except in accordance with the provisions of this act and with such rules and regulations of State and municipal health authorities as may be made in pursuance of, or consistent with, this act; and any such vessel which shall enter, or attempt to enter, a port of the United States in violation thereof shall forfeit to the United States a sum, to be awarded in the discretion of the court, not exceeding five thousand dollars, which shall be a lien upon said vessel, to be recovered by proceedings in the proper district court of the United States. In all such proceedings the United States district attorney for such district shall appear on behalf of the United States; and all such proceedings shall be conducted in accordance with the rules and laws governing cases of seizure of vessels for violation of the revenue laws of the United States.

SEC. 2. That any vessel at any foreign port clearing for any port or place in the United States shall be required to obtain from the consul, vice-consul, or other consular officer of the United States at the port of departure, or from the medical officer where such officer has been detailed by the President for that purpose, a bill of health, in duplicate, in the form prescribed by the Secretary of the Treasury, setting forth the sanitary history and condition of said vessel, and that it has in all respects complied with the rules and regulations in such cases prescribed for securing the best sanitary condition of the said vessel, its cargo, passengers, and crew; and said consular or medical officer is required, before granting such duplicate bill of health, to be satisfied that the matters and things therein stated are true; and for his services in that behalf he shall be entitled to demand and receive such fees as shall by lawful regulation be allowed, to be accounted for as is required in other cases.

The President, in his discretion, is authorized to detail any medical officer of the Government to serve in the office of the consul at any foreign port for the purpose of furnishing information and making the inspection and giving the bills of health hereinbefore mentioned. Any vessel clearing and sailing from any such port without such bill of health, and entering any port of the United States, shall forfeit to the United States not more than five thousand dollars, the amount to be determined by the court, which shall be a lien on the same, to be recovered by proceedings in the proper district court of the United States. In all such proceedings the United States district attorney for such district shall appear on behalf of the United States; and all such proceedings shall be conducted in accordance with the rules and laws governing cases of seizure of vessels for violation of the revenue laws of the United States.

SEC. 3. That the Supervising Surgeon-General of the Marine-Hospital Service shall, immediately after this act takes effect, examine the quarantine regulations of all State and municipal boards of health, and shall, under the direction of the Secretary of the Treasury, coöperate with and aid State and municipal boards of health in the execution and enforcement of the rules and regulations of such boards and in the execution and enforcement of the rules and regulations made by the Secretary of the Treasury to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, and into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia; and all rules and regulations made by the Secretary of the Treasury shall operate uniformly and in no manner discriminate against any port or place; and at such ports and places within the United States as have no quarantine regulations under State or municipal authority, where such regulations are, in the opinion of the Secretary of the Treasury, necessary to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, and at such ports and places within the United States where quarantine regulations exist under the authority of the State or municipality which, in the opinion of the Secretary of the Treasury, are not sufficient to prevent the introduction of such diseases into the United States, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, the Secretary of the Treasury shall, if in his judgment it is necessary and proper, make such additional rules and regulations as are necessary to prevent the introduction of such diseases into the United States from foreign countries, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, and when said rules and regulations have been made they shall be promulgated by the Secretary of the Treasury and enforced by the sanitary authorities of the States and municipalities, where the State or municipal health authorities will undertake to execute and enforce them; but if the State or municipal authorities shall fail or refuse to enforce said rules and regulations the President shall execute and enforce the same and adopt such measures as in his judgment shall be necessary to prevent the introduction or spread of such diseases, and may detail or appoint officers for that purpose. The Secretary of the Treasury shall make such rules and regulations as are necessary to be observed by vessels at the port of departure and on the voyage, where such vessels sail from any foreign port or place to any port or place in the United States, to secure the best sanitary condition of such vessel, her cargo, passengers, and crew; which shall be published and communicated to and enforced by the consular officers of the United States. None of the penalties herein imposed shall attach to any vessel or owner or officer thereof until a copy of this act, with the rules and regulations made in pursuance thereof, has been posted up in the office of the consul or other consular officer of the United States for ten days, in the port from which said vessel sailed; and the certificate of such consul or consular officer over his official signature shall be competent evidence of such posting in any court of the United States.

SEC. 4. That it shall be the duty of the Supervising Surgeon-General of the Marine Hospital Service, under the direction of the Secretary of the Treasury, to perform all the duties in respect to quarantine and quarantine regulations which are provided for by this act, and to obtain information of the sanitary condition of foreign ports and places from which contagious and infectious diseases are or may be imported into the United States, and to this end the consular officer of the United States at such ports and places as shall be designated by the Secretary of the Treasury shall make to the Secretary of the Treasury weekly reports of the sanitary condition of the ports and places at which they are respectively stationed, according to such forms as the Secretary of the Treasury shall prescribe; and the Secretary of the Treasury shall also obtain through all sources accessible, including State and municipal sanitary authorities throughout the United States, weekly reports of the sanitary condition of ports and places within the United States, and shall prepare, publish, and transmit to collectors of customs and to State and municipal health officers and other sanitarians weekly abstracts of the consular sanitary reports and other pertinent information received by him, and shall also, as far as he may be able, by means of voluntary coöperation of State and municipal authorities, of public associations, and private persons, procure information relating to the climatic and other conditions affecting the public health, and shall make an annual report of his operations to Congress, with such recommendations as he may deem important to the public interests.

SEC. 5. That the Secretary of the Treasury shall from time to time issue to the consular officers of the United States and to the medical officers serving at any foreign port, and otherwise make publicly known, the rules and regulations made by him, to be used and complied with by vessels in foreign ports, for securing the best sanitary condition of such vessels, their cargoes, passengers, and crew, before their departure for any port in the United States, and in the course of the voyage; and all such other rules and regulations as shall be observed in the inspection of the same on the arrival thereof at any quarantine station at the port of destination, and for the disinfection and isolation of the same, and the treatment of cargo and persons on board, so as to prevent the introduction of cholera, yellow fever, or other contagious or infectious diseases; and it shall not be lawful for any vessel to enter said port to discharge its cargo, or land its passengers, except upon a certificate of the health officer at such quarantine station certifying that said rules and regulations have in all respects been observed and complied with, as well on his part as on the part of the said vessel and its master, in respect to the same and to its cargo, passengers, and crew; and the master of every such vessel shall produce and deliver to the collector of customs at said port of entry, together with the other papers of the vessel, the said bills of health required to be obtained at the port of departure and the certificate herein required to be obtained from the health officer at the port of entry; and that the bills of health herein prescribed shall be considered as part of the ship's papers, and when duly certified to by the proper consular officer or other officer of the United States, over his official signature and seal, shall be accepted as evidence of the statements therein contained in any court of the United States.

SEC. 6. That on the arrival of an infected vessel at any port not provided with proper facilities for treatment of the same, the Secretary of the Treasury may remand said vessel, at its own expense, to the nearest national or other quarantine station, where accommodations and appliances are provided for the necessary disinfection and treatment of the vessel, passengers, and cargo; and after treatment of any infected vessel at a national quarantine station, and after certificate shall have been given by the United States quarantine officer at said station that the vessel, cargo, and passengers are each and all free from infectious disease, or danger of conveying the same, said vessel shall be admitted to entry to any port of the United States named within the certificate. But at any ports where sufficient quarantine provision has been made by State or local authorities the Secretary of the Treasury may direct vessels bound for said ports to undergo quarantine at said State or local station.

SEC. 7. That whenever it shall be shown to the satisfaction of the President that by reason of the existence of cholera or other infectious or contagious diseases in a foreign country there is serious danger of the introduction of the same into the United States, and that notwithstanding the quarantine defense this danger is so increased by the introduction of persons or property from such country that a suspension of the right to introduce the same is demanded in the interest of the public health, the President shall have power to prohibit, in whole or in part, the introduction of persons and property from such countries or places as he shall designate and for such period of time as he may deem necessary.

SEC. 8. That whenever the proper authorities of a State shall surrender to the United States the use of the buildings and disinfecting apparatus at a State quarantine station, the Secretary of the Treasury shall be authorized to receive them and to pay a reasonable compensation to the State for their use, if in his opinion they are necessary to the United States.

SEC. 9. That the act entitled "An act to prevent the introduction of infectious or contagious diseases into the United States, and to establish a national board of health," approved March 3, 1879, be, and the same is hereby, repealed. And the Secretary of the Treasury is directed to obtain possession of any property, furniture, books, paper, or records belonging to the United States which are not in the possession of an officer of the United States under the Treasury Department which were formerly in the use of the National Board of Health or any officer or employé thereof.

REVISED STATUTES.

SEC. 4794. There shall be purchased or erected, under the orders of the President, suitable warehouses, with wharves and inclosures, where merchandise may be unladen and deposited, from any vessel which shall be subject to a quarantine or other restraint, pursuant to the health-laws of any State, at such convenient places therein as the safety of the public revenue and the observance of such health-laws may require.

SEC. 4795. Whenever the cargo of a vessel is unladen at some other place than the port of entry or delivery under the foregoing provisions, all the articles of such cargo shall be deposited, at the risk of the parties concerned therein, in such public or other warehouses or inclosures as the collector shall designate, there to remain under the joint custody of such collector and of the owner, or master, or other person having charge of such vessel, until the same are entirely unladen or discharged, and until the articles so deposited may be safely removed without contravening such health-laws. And when such removal is allowed, the collector having charge of such articles may grant permits to the respective owners or consignees, their factors or agents, to receive all merchandise which has been entered, and the duties accruing upon which have been paid, upon the payment by them of a reasonable rate of storage; which shall be fixed by the Secretary of the Treasury for all public warehouses and inclosures.

SEC. 4796. The Secretary of the Treasury is authorized, whenever a conformity to such quarantines and health-laws requires it, and in respect to vessels subject thereto, to prolong the terms limited for the entry of the same, and the report or entry of their cargoes, and to vary or dispense with any other regulations applicable to such reports or entries. No part of the cargo of any vessel shall, however, in any case, be taken out or unladen therefrom, otherwise than is allowed by law, or according to the regulations hereinafter established.

SEC. 4797. Whenever, by the prevalence of any contagious or epidemic disease in or near the place by law established as the port of entry for any collection district, it becomes dangerous or inconvenient for the officers of the revenue employed therein to continue the discharge of their respective offices at such port, the Secretary of the Treasury, or, in his absence, the First Comptroller, may direct the removal of the officers of the revenue from such port to any other more convenient place, within, or as near as may be to, such collection district. And at such place such officers may exercise the same powers, and shall be liable to the same duties, according to existing circumstances, as in the port or district established by law. Public notice of any such removal shall be given as soon as may be. [See § 1776.]

SEC. 4798. In case of the prevalence of a contagious or epidemic disease at the seat of Government, the President may permit and direct the removal of any or all the public offices to such other place or places as he shall deem most safe and convenient for conducting the public business. [See § 1776.]

SEC. 4799. Whenever, in the opinion of the Chief Justice, or, in case of his death, or inability, of the senior associate justice of the Supreme Court, a contagious or epidemic sickness shall render it hazardous to hold the next stated session of the court at the seat of Government, the chief or such associate justice may issue his order to the marshal of the Supreme Court, directing him to adjourn the next session of the court to such other place as such justice deems convenient. The marshal shall thereupon adjourn the court, by making publication thereof in one or more public papers printed at the seat of Government from the time he shall receive such order until the time by law prescribed for commencing the session. The several circuit and district judges shall, respectively, under the same circumstances, have the same power, by the same means, to direct adjournments of the several circuit and district courts to some convenient place within their districts respectively. [See § 1776.]

SEC. 4800. The judge of any district court, within whose district any contagious or epidemic disease shall at any time prevail, so as, in his opinion, to endanger the lives of persons confined in the prison of such district, in pursuance of any law of the United States, may direct the marshal to cause the persons so confined to be removed to the next adjacent prison where such disease does not prevail, there to be confined until they may safely be removed back to the place of their first confinement. Such removals shall be at the expense of the United States.

SEC. 4263. The master of any vessel employed in transporting passengers between the United States and Europe is authorized to maintain good discipline and such habits of cleanliness among the passengers as will tend to the preservation and promotion of health; and to that end he shall cause such regulations as he may adopt for this purpose to be posted up, before sailing, on board such vessel, in a place accessible to such passengers, and shall keep the same so posted up during the voyage. Such master shall cause the apartments occupied by such passengers to be kept at all times in a clean healthy state; and the owners of every such vessel so employed are required to construct the decks and all parts of the apartments so that they can be thoroughly cleansed; and also to provide a safe, convenient privy or water-closet for the exclusive use of every one hundred such passengers. The master shall also, when the weather is such that the passengers cannot be mustered on deck with their bedding, and at such other times as he may deem necessary, cause the deck occupied by such passengers to be cleansed with chloride of lime or some other equally efficient disinfecting agent. And for each neglect or violation of any of the provisions of this section the master and owner of any such vessel shall be severally liable to the United States in a penalty of fifty dollars, to be recovered in any circuit or district court within the jurisdiction of which such vessel may arrive or from which she is about to depart, or at any place where the owner or master may be found.

[Extract from act August 1 1888.]

Whenever any person shall trespass upon the grounds belonging to any quarantine reservation, * * * such person, trespassing, * * * shall, upon conviction thereof, pay a fine of not more than three hundred dollars, or be sentenced to imprisonment for a period of not more than thirty days, or shall be punished by both fine and imprisonment, at the discretion of the court. And it shall be the duty of the United States attorney in the district where the misdemeanor shall have been committed to take immediate cognizance of the offense, upon report made to him by any medical officer of the Marine-Hospital Service, or by any officer of the customs service, or by any State officer acting under authority of section five of said act.

[Act March 27, 1890.]

AN ACT to prevent the introduction of contagious diseases from one State to another and for the punishment of certain offenses.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That whenever it shall be made to appear to the satisfaction of the President that cholera, yellow fever, smallpox or plague exists in any State or Territory, or in the District of Columbia, and that there is danger of the spread of such disease into other States, Territories, or the District of Columbia, he is hereby authorized to cause the Secretary of the Treasury to promulgate such rules and regulations as in his judgment may be necessary to prevent the spread of such disease from one State or Territory into another, or from any State or Territory into the District of Columbia, or from the District of Columbia into any State or Territory, and to employ such inspectors and other persons as may be necessary to execute such regulations to prevent the spread of such disease. The said rules and regulations shall be prepared by the Supervising Surgeon-General of the Marine Hospital Service under the direction of the Secretary of the Treasury. And any person who shall willfully violate any rule or regulation so made and promulgated shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine of not more than five hundred dollars, or imprisonment for not more than two years, or both, in the discretion of the court.

SEC. 2. That any officer, or person acting as an officer, or agent of the United States at any quarantine station, or other person employed to aid in preventing the spread of such disease, who shall willfully violate any of the quarantine laws of the United States, or any of the rules and regulations made and promulgated by the Secretary of the Treasury as provided for in section 1 of this act, or any lawful order of his superior officer or officers, shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine of not more than three hundred dollars or imprisonment for not more than one year, or both, in the discretion of the court.

SEC. 3. That when any common carrier or officer, agent, or employé of any common carrier shall willfully violate any of the quarantine laws of the United States, or the rules and regulations made and promulgated as provided for in section 1 of this act, such common carrier, officer, agent, or employé shall be deemed guilty of a misdemeanor, and shall, on conviction, be punished by a fine of not more than five hundred dollars, or imprisonment for not more than two years or both, in the discretion of the court.

QUARANTINE REGULATIONS TO BE OBSERVED AT FOREIGN PORTS AND AT SEA.

ARTICLE I.—BILLS OF HEALTH.

PAR. 1.—Masters of vessels departing from any foreign port for a port in the United States must obtain a bill of health in duplicate, signed by the proper officer or officers of the United States, as provided for by law.

The following form is prescribed:

PAR. 2.—Bill of health:

Form No. 1931*a*.

UNITED STATES BILL OF HEALTH.

Name of vessel, ———. Nationality, ———. Rig, ———. Master, ———. Tonnage—gross, ———; net, ———. Iron or wood. Number of compartments for cargo, ———; for steerage passengers, ———; for crew, ———.

Name of medical officer, ———.
Number of officers, ———.
Number of crew, including petty officers, ———.
Number of passengers, cabin, ———.
Number of passengers, steerage, ———.
Number of persons on board all told, ———.
Port of departure, ———.
Where last from, ———.
Number of cases of sickness, and character, during last voyage, ———.
Vessel engaged in ——— trade, and plies between ——— and ———.
Sanitary condition of vessel, ———.
Nature, sanitary history, and condition of cargo, ———.
Source and wholesomeness of water supply, ———.
Source and wholesomeness of food supply, ———.
Sanitary history and health of officers and crew, ———.
Sanitary history and health of passengers, cabin, ———.
Sanitary history and health of passengers, steerage, ———.
Sanitary history and condition of their effects, ———.
Prevailing diseases at port and vicinity, ———.

Number of cases and deaths from the following-named diseases during the past two weeks:

Diseases.	No. of cases.	No. of deaths.
Yellow fever	....	....
Asiatic cholera	....	....
Cholera nostras or cholerine	....	....
Smallpox	....	....
Typhus	....	....

Any conditions affecting the public health existing in the port of departure or vicinity to be here stated, ———.

I certify that the vessel has complied with the rules and regulations made under the act of February 15, 1893, and that the vessel leaves this port bound ——— for ———, United States of America, via ———.

Given under my hand and seal this ——— day of ———, 189–.

(Signature of consular officer:) ——— ———,

——— ———.

PAR. 3. Vessels clearing from a foreign port for any port in the United States, and entering or calling at intermediate ports, must procure at all said ports a supplemental bill of health signed as provided in Article I. If a quarantinable disease has appeared on board the vessel after leaving the original port of departure, or other circumstances presumably render the vessel infected, the supplemental bill of health should be withheld until such sanitary measures have been taken as are necessary.

The following form is prescribed:

PAR. 4.—

SUPPLEMENTAL BILL OF HEALTH.

Port of ———.

Vessel ———, bound from ——— to ———, United States of America.

Sanitary condition of port, ———.

State diseases prevailing at port and in surrounding country, ———.

Number of cases and the deaths from the following-named diseases during the past two weeks:

Diseases.	No. of cases.	No. of deaths.	Remarks. (Any condition affecting the public health existing in the port to be stated here.)
Yellow fever.....	....	....	....
Asiatic cholera or cholerine.......	....	....	....
Smallpox..........	....	....	....
Typhus	....	....	....

Number and sanitary condition of passengers taken on at this port, and sanitary condition of effects.

Cabin, No. ———. Sanitary condition and history, ———.

Steerage, No. ———. Sanitary condition and history, ———.

(Cancel Form A, B, or C, as the case requires.)

Form.

A.—To the best of my knowledge and belief—

(Form A will be used at intermediate ports where the vessel does not enter and clear.)

B.—I have satisfied myself that—

(Form B will be used at intermediate ports where the vessel enters and clears.)

} No quarantinable disease has appeared aboard since leaving ———.

C.—Since leaving ——— the following quarantinable disease has appeared on board ———, and I certify that the necessary sanitary measures have been taken.

I certify also that with reference to the passengers, effects, and cargo taken on at this port the vessel has complied with the rules and regulations made under the act of February 15, 1893.

Given under my hand and seal this ——— day of ———, 189–.

(Signature of consular officer:) ——— ———,
——— ———.

ARTICLE II.—INSPECTION.

PAR. 1. The officer issuing the bill of health will satisfy himself, by inspection if necessary, that the conditions certified to therein are true.

PAR. 2. Inspection is required of—

(*a*) All vessels from ports at which cholera prevails, or at which yellow fever, smallpox, or typhus fever prevails in epidemic form.

(*b*) All vessels carrying steerage passengers.

But the inspection of this class may be limited to said passengers and their living apartments, if from a healthy port.

PAR. 3. Inspection of the vessel is such an examination of the vessel, cargo, passengers, crew, personal effects of same, and including examination of manifests and other papers, food and water supply, as will enable him to determine if these regulations have been complied with.

PAR. 4. When an inspection is required, it should be made by daylight, as late as practicable before sailing. The vessel should be inspected before the passengers go aboard, the passengers just before embarkation, and the crew on deck; and no cargo or person should be allowed to come aboard after such inspection except by permission of the officer issuing the bill of health.

ARTICLE III.—REQUIREMENTS WITH REGARD TO VESSELS.

PAR. 1. Vessels, prior to stowing cargo or receiving passengers, shall be mechanically clean in all parts, especially the hold, forecastle, and steerage; the bilges and limbers free from odor and deposit. The air streaks should be sufficient in number and open for ventilation. Disinfection of the vessel may be required by the medical officer of the United States.

PAR. 2. If any infectious disease has occurred during the last voyage, the portions of the vessel liable to have been infected should be disinfected. When required, this should be done by one of the methods hereinafter described.

PAR. 3. The air space and ventilation must conform to the provisions of the act of Congress approved August 2, 1882, entitled "An act to regulate the carriage of passengers by sea."[1]

PAR. 4. The food and water supply should be sufficient, and water for drinking purposes, free from possibility of pollution, should be easily accessible.

PAR. 5. Vessels departing from a port where cholera prevails should have two medical officers if more than 250 steerage passengers are carried.

PAR. 6. All bedding provided for steerage passengers must be destroyed or disinfected before being again used or landed, and mattresses and pillows used by steerage passengers shall not be landed.

PAR. 7. The hospitals of vessels carrying steerage passengers should be located on the upper or second deck and not in direct communication with any steerage compartment.

PAR. 8. Excepting when absolutely required, no solid partitions should be placed in any steerage compartment, obstructing light and air.

ARTICLE IV.—CARGO.

PAR. 1. At ports infected with cholera, earth, sand, loam, soft or porous rock should not be taken as ballast. Nor at ports infected with yellow fever, should such ballast be allowed on board vessels clearing for ports south of the southern boundary of Maryland, when better material, such as hard rock, is obtainable, or when it is possible to use water ballast.

PAR. 2. Certain food products, viz, unsalted meats, sausages, dressed poultry, dried and smoked meats, rennets, fresh butter, fresh milk (unsterilized), fresh cheese, fresh bread, fresh vegetables, coming from cholera infected localities, or through such localities, if exposed to infection therein, should not be shipped.

PAR. 3. Fresh fruits from districts where cholera prevails shall be shipped only under such sanitary supervision as will enable the inspector to certify that they have not been exposed to infection.

PAR. 4. Articles of merchandise, personal effects, and bedding, coming from a district known to be infected, or as to the origin of which no positive evidence can be obtained, and which the consular or medical officer has reason to believe are infected, should be subjected to disinfection prior to shipment by processes prescribed for articles according to their class.

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[1] Computation of air space in any steerage compartment must not include the space taken up by bunks, mattresses, life-preservers, or personal effects.

PAR. 5. New merchandise in general may be accepted for shipment without question; and articles of new merchandise, textile fabrics, and the like, which have been packed or prepared for shipment in an infected port or place, with a special view to protect the same from moisture incident to the voyage, may be accepted and exempted from disinfection.

PAR. 6. All rags and all textile fabrics used in the manufacture of paper, collected or packed in any foreign port or place, must, prior to shipment to the United States, be subjected to disinfection by one of the prescribed methods:

(Old jute bags, old cotton bags, old rope, new cotton and linen cuttings from factories, not included.)

PAR. 7. Rags, old jute, old gunny, old rope, and similar articles gathered or packed or handled in any port or place where cholera or yellow fever prevails, or smallpox or typhus fever prevails in epidemic form, should not be shipped until the officer issuing the bill of health shall be satisfied that the port or place has been for thirty days free from such infection, and after the disinfection of the articles.

PAR. 8. New feathers for bedding, human and other hair, unmanufactured, bristles, wool, hides not chemically cured, coming from a district where cholera prevails, shall be refused shipment until thirty days have elapsed since last exposure, unless unpacked and disinfected as hereinafter provided.

Feathers which have been used should be disinfected, and invariably by steam.

PAR. 9. The articles enumerated in the preceding paragraph, coming from a district where yellow fever prevails, destined for ports or places south of the southern boundary of Maryland during the quarantine season, or where smallpox or typhus fever prevails in epidemic form, should be refused shipment unless disinfected, as hereinafter provided.

PAR. 10. Articles such as gelatin, glue, glue stock, fish glue, fish bladders, fish skins, sausage casings, bladders, dried blood, having been in any way liable to infection in the process of preparation, gathering, or shipment, should be disinfected.

PAR. 11. Any covering shipped from or through an infected port or place, and which the consul or medical officer has reason to believe infected, should be disinfected.

PAR. 12. Any article presumably infected which can not be disinfected should not be shipped.[1]

ARTICLE V.—PASSENGERS AND CREW.

PAR. 1. Passengers, for the purposes of these regulations, are divided into two classes, cabin and steerage.

PAR. 2. No person suffering from a quarantinable disease, or scarlet fever, measles, or diphtheria, should be allowed to ship.

PAR. 3. Steerage passengers and crew, coming from districts where smallpox prevails in epidemic form, or who have been exposed to smallpox, shall be vaccinated before embarkation, unless they show evidence of immunity to smallpox by previous attack or recent successful vaccination.

PAR. 4. Steerage passengers and crew who, in the opinion of the inspecting officer, have been exposed to the infection of typhus fever, should not be allowed to embark for a period of at least fourteen days after such exposure and the disinfection of their baggage.

PAR. 5. When practicable, passengers should not ship from an infected port. Steerage passengers coming from cholera-infected districts must be detained five days in suitable houses or barracks located where there is no danger from infection, and all baggage disinfected as hereinafter provided; the said period of five days to begin only after the bathing of the passengers, disinfection of all their baggage and apparel, removal of all food brought with them, and isolation from others not so treated.

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[1] Upholstered furniture, sheepskins used as wearing apparel, bedding, bones, horns, and hoofs.

PAR. 6. Steerage passengers from districts not infected with cholera, shipping at a port infected with cholera, unless passed through without danger of infection and no communication allowed between passengers and the infected locality, should be treated as those in the last paragraph.

PAR. 7. Prior to sailing from ports infected with cholera, each passenger of the cabin class should produce satisfactory evidence as to his exact place of abode during the five days immediately preceding embarkation, and if it appears that he or his baggage has been exposed to contagion, such passenger should be detained such length of time as shall be deemed necessary by the inspecting officer, and the baggage should be disinfected.

PAR. 8. The rules prescribed for the disinfection of the baggage and personal effects of passengers and crew coming from cholera-infected ports should also be observed with regard to passengers and crew coming from ports and places where plague, yellow fever, typhus fever, or smallpox is prevailing in an epidemic form.

PAR. 9. Should cholera break out in the barracks or houses in which the passengers are undergoing the five days' observation, no passenger from said house or barracks should embark until five days' isolation from the last case and a repetition of the sanitary measures previously taken.

PAR. 10. All baggage of steerage passengers destined for the United States shall be labeled. If the baggage has been inspected and passed the label shall be a red label bearing the name of the port, the steamship on which the baggage is to be carried, the word *"inspected"* in large type, the date of inspection, and the seal or stamp of the consular or medical officer of the United States. All baggage that has been disinfected shall bear a yellow label, upon which shall be printed the name of the port, the steamship upon which the baggage is to be carried, the word *"disinfected"* in large type, the date of disinfection, and the seal or stamp of the consular or medical officer of the United States. It is understood, and it will be so printed on the blank, that the label is not valid unless bearing the consular or medical officer's stamp or seal.

Par. 11. Each steerage passenger should be furnished with an inspection card (see form below). This card, stamped by the consular or medical officer, is to be issued to every member of a family as well as to the head thereof.

Par. 12.

INSPECTION CARD.

[Immigrants and steerage passengers.]

Port of departure, ______________ Date of departure,

Name of ship, ______________ ______________

Name of immigrant, ______________ Last permanent residence, ______________

Inspected and passed at ______________ [Seal or stamp of consular or medical officer.]	Passed at quarantine, port of ______________, U. S. ______________ (Date.)	Passed by Immigration Bureau, port of ______________ ______________ (Date.)

[The following to be filled in by ship's surgeon or agent prior to or after embarkation.]

Ship's list or manifest, ______________ No. on ship's list or manifest, ______________

Berth No. ______________	Steamship inspection.	1st day.	2	3	4	5	6	7	8	9	10	11	12	13	14	To be punched by ship's surgeon at daily inspection.

VACCINATED.

[Signature or stamp.]

[REVERSE SIDE.]

Keep this card to avoid detention at quarantine and on railroads in the United States.

Diese Karte muss aufbewahrt werden, um Aufenthalt an der Quarantäne, sowie auf den Eisenbahnen der Vereinigten Staaten zu vermeiden.

Cette carte doit être conservée pour éviter une détention à la Quarantaine, ainsi que sur les chemins de fer des États-Unis.

Deze kaart moet bewaard worden, ten einde oponthoud aan de Quarantijn, alsook op de ijzeren wegen der Vereenigde Staten te vermijden.

Conservate questo biglietto onde evitare detenzione alla Quarantina e sulle Ferrovie degli Stati Uniti.

Tento lístek musíte uschovati, nechcete-li ukarantény (zastavení ohledně zjištěni zdraví) neb na dráze ve spojenych státech zdrźení bỳti.

Tuto kartoćku treba trímat' u sebe aby sa predeślo zderżovańu v karantene aj na żeleznici vo Spojenych Státoch.

PAR. 13. Cabin passengers from cholera-infected ports or places should be given a special inspection card, on which shall be printed the port of departure, name of passenger, name of ship, date of departure, and an indicated space for the seal or stamp of the consular or medical officer.

PAR. 14. The baggage of such cabin passengers shall be labeled in the same manner as steerage baggage.

PAR. 15. In a port where cholera prevails, or where yellow fever prevails in epidemic form, the crews of passenger ships should remain on board during their stay. Should additional men be shipped, the same precautions should be observed with them as in the case of steerage passengers. If it is considered necessary, the crews of freight ships may be similarly treated at the discretion of the medical officer.

PAR. 16. Passengers and crews, merchandise and baggage, prior to shipment at a noninfected port, but coming from an infected locality, should be subject to the same restrictions as are imposed in an infected port.

ARTICLE VI.—REQUIREMENTS AT SEA.

PAR. 1. The master of the vessel should cause the following rules (which comprise those recommended by the International Conference of Rome, 1885) to be observed during the voyage.

(*a*) The soiled body linen of passengers and crew suffering from infectious disease should be at once immersed in boiling water or in a disinfecting solution.

(*b*) The water-closets should be washed and disinfected twice a day.

(*c*) Rigorous cleanliness and free ventilation should be maintained during the voyage on board all ships.

PAR. 2. An inspection of the vessel, including the steerage, should be made by the ship's physician once each day.

PAR. 3. Should cholera (or cholerine), yellow fever, typhus fever, or smallpox appear on board a ship while at sea, those who first show symptoms of these diseases will be immediately sent to the hospital; the ship's physician will then immediately notify the captain, and all of the effects liable to convey infection, which have been in use, will be destroyed or disinfected.

PAR. 4. The compartments occupied by those who fall sick with infectious disease should be disinfected, and, as far as possible, the compartments thus disinfected should be freely exposed to the air. If the vessel is an iron steamer and the compartments suitable, the entire compartment should be disinfected by steam. The articles liable to convey infection should remain in the compartments during the disinfection. After disinfection of the compartments the bedding and clothing may be removed and dried.

PAR. 5. Patients with infectious disease should be isolated.

PAR. 6. The hospital should be disinfected as soon as it becomes vacant.

PAR. 7. The dead should be enveloped in a sheet saturated with one of the strong disinfecting solutions, without previous washing of the body, and at once placed in a coffin hermetically sealed, or buried at sea.

PAR. 8. A clinical record should be kept on the prescribed form, by the ship's surgeon, of all cases of sickness on board, and delivered to the quarantine officer at the port of arrival.

PAR. 9. Under the foregoing paragraphs disinfecting solutions are limited to the following: Strong—Acid solution of bichloride of mercury (1 to 500); a 1 to 20 solution of pure carbolic acid. Weak—Acid solution of bichloride of mercury (1 to 1,000); pure carbolic acid, 1 to 40.

PAR. 10. (Form of clinical report:)*

Name.	Age.	Sex.	Last permanent residence.	Date of admission.	Disease.	Discharged.	Result.
Clinical history.							
Clinical history.							
Clinical history.							
Clinical history.							

* Temperature to be recorded.

PAR. 11. Sailing vessels leaving ports infected with yellow fever, and destined for any port in the United States south of the southern boundary of Maryland, which is not provided with proper facilities for treatment, shall, during the quarantine period, be directed by the consular or medical officer to proceed for disinfection and treatment to some quarantine station in the United States provided with the required facilities.

ARTICLE VII.—DISINFECTION.

PAR. 1. The disinfection of iron vessels shall be as follows:

(*a*) *Holds.*—After mechanical cleansing, the hold to be thoroughly washed with an acid solution of bichloride of mercury, 1 to 800 (mercury 1 part, hydrochloric acid 2 parts, water 800 parts), applied under pressure to all surfaces by means of a hose.

IN CASE THE DISINFECTION IS REQUIRED FOR YELLOW FEVER.

If the cargo is so stowed as to admit of disinfection, the hold and cargo may be disinfected without breaking bulk, by sulphur dioxide, 10 per cent per volume strength, forty-eight hours' exposure for iron, and seventy-two hours for wooden vessels.

(*b*) *Steerage and forecastle.*—The same treatment should be given the steerage and forecastle as the hold, but when practicable steam disinfection of these compartments should be practiced. The temperature in all parts of the compartments is to be not less than 100° C.

(*c*) *Cabins, officers' quarters, staterooms, etc.*—The bedding, fabrics, and carpets should be removed and disinfected by steam. After thorough mechanical cleansing, the exposed surfaces of fabrics, which cannot be removed, should be washed with a solution of bichloride of mercury,[1] 1 to 1,000, or 3 per cent solution of carbolic acid, both of which should be removed, but not under two hours. Afterwards the apartments should be thoroughly dried and aired.

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[1] Polished metal is injured by mercury, and leather by steam.

Par. 2. The disinfection of wooden vessels is to be accomplished as follows: After mechanical cleansing, washing out the bilges until clean, etc. (first), by fumigation by sulphur dioxide, 10 per cent strength, twenty-four hours in the cabin and forecastle and forty-eight hours in the hold; and (second), flushing or washing with acid solution of bichloride of mercury in large quantity (1 to 800). The bilges to be first flushed with sea water, pumped out, and then treated with the acid solution of bichloride of mercury in large quantity, allowed to remain in long contact. In addition to the sulphur fumigation of such apartments, the cabins, forecastle, and other apartments, and their contents, to be treated as those on iron vessels.

CARGO.

Par. 3. Disinfection of rags and old jute, etc., shall be by one of the following methods:

(*a*) By boiling in water for not less than thirty minutes.

(*b*) By steam at the temperature of 100° C. for not less than thirty minutes after such temperature is reached.

(*c*) By exposure for not less than six hours in a closed compartment to a 4 per cent strength (per volume) of sulphur dioxide gas—made by burning roll sulphur or by the liberation of liquefied sulphur dioxide—allowance to be made for leakage by increasing the amount of sulphur.

Par. 4. In all of the above methods, the rags, old jute, etc., must be unbaled, and in the disinfection by steam or sulphur the rags must be loosely spread on racks (preferably wire netting) in layers of not more than 6 inches in depth, and in such a manner as to insure the diffusion of the gas to all parts alike.

The articles must not at any time occupy more than 50 per cent of the total cubic space, and the exposure to date from the complete combustion of the sulphur.

Par. 5. New feathers for bedding shall be disinfected by one of the following methods:

(*a*) By steam at a temperature of 100° C. for a period of thirty minutes after such temperature has been reached.

(*b*) By exposure to sulphur dioxide, 4 per cent strength per volume, for not less than six hours.

Par 6 Human hair or other hair, unmanufactured, and bristles, to be disinfected by sulphur dioxide, 4 per cent strength per volume, six hours, or, if not clean, by a solution of pure carbolic acid 4 per cent strength, the articles to be thoroughly saturated.

Par. 7. Wool to be disinfected by sulphur dioxide, 4 per cent strength per volume, for not less than twenty hours, the wool to be unbaled and loosely spread on racks, as in the manner provided for the disinfection of rags.

Par. 8. Hides to be disinfected by sulphur dioxide, 4 per cent strength per volume, for not less than twenty hours, or by thorough saturation with a solution of pure carbolic acid, 4 per cent strength; hides to be invariably unbaled for the purpose.

Par. 9. Articles mentioned in paragraph 10, Article IV, should be disinfected by being spread on racks and exposed to sulphur dioxide, 4 per cent per volume, twenty hours.

Par. 10. Coverings should be disinfected:

(*a*) In the hold, by exposure to sulphur dioxide, 10 per cent strength per volume, for twelve hours; the cargo being so stowed as to allow access to all parts of such surfaces.

(*b*) By breaking bulk and exposure to sulphur dioxide, 4 per cent strength per volume, for twenty-four hours.

(*c*) By wetting thoroughly with solution of bichloride of mercury, 1 to 800.

Par. 11. The disinfection of personal effects, prescribed by these regulations, should be as follows:

(A) Clothing and bedding should be disinfected by—(1) Exposure to steam from 100° to 102° C. for thirty minutes after such temperature is reached, or by boiling for thirty minutes. (2) Immersion in bichloride solution, 1 to 800, or solution of pure carbolic acid, 3 per cent, until thoroughly wetted, and allowed to dry before washing.

This last process (2) to be used only for articles that will be injured by steam or boiling.[1]

(B) Cooking and eating utensils should be immersed in boiling water.

NOTE.—A 4 per cent per volume strength of sulphur dioxide can be obtained by burning not less than 4 pounds 2 ounces of sulphur to each 1,000 cubic feet of space; the compartment to be air-tight.

A 10 per cent per volume strength can only be obtained by one of the following methods: By the use of a special furnace, or by liquefied sulphur dioxide gas.

ARTICLE VIII.—RECORDS, REPORTS, ETC.

The officer making the inspection will preserve in his office a record of each inspection made. A copy of said record will be forwarded weekly to the Supervising Surgeon-General of the Marine-Hospital Service, at Washington, D. C.

In addition to the duties already prescribed, the medical officer, when detailed in accordance with the act of Congress approved February 15, 1893, shall furnish such reports to the Supervising Surgeon-General Marine-Hospital Service as may be required by the latter.

NOTES FOR THE INFORMATION OF MASTERS OF VESSELS AND OTHERS.

FORMULÆ FOR STRONG DISINFECTING SOLUTIONS.

Bichloride of mercury (1 to 500).

	Parts.
Bichloride of mercury	1
Hydrochloric acid	2
Water	500

Mix.

Carbolic acid.

Carbolic acid (pure)	50
Warm water	1,000

FORMULÆ FOR WEAK SOLUTIONS.

Bichloride of mercury (1 to 1,000).

Bichloride of mercury	1
Hydrochloric acid	2
Water	1,000

Carbolic acid.

Carbolic acid (pure)	25
Warm water	1,000

DISINFECTION OF HOSPITALS, INFECTED COMPARTMENTS, ETC.

(*a*) By steam, as provided in Article VII, paragraph (*c*); or, when steam is not available.

(*b*) By methods prescribed in Article VII, paragraphs (*a*) and (*c*).

Water-closets, etc., should be disinfected by strong solution of bichloride of mercury or carbolic acid.[2]

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[1] Articles of rubber, leather, celluloid, gutta-percha, hats, furs, skins, and similar articles are injured by steam or boiling.

[2] The use of these disinfecting solutions does not preclude the additional use of hypochlorite of lime.

It is suggested that a vessel should carry for every 100 passengers: Bichloride of mercury, 5 pounds; hydrochloric acid, 10 pounds; carbolic acid, 10 pounds.

QUARANTINE REGULATIONS TO BE OBSERVED AT PORTS AND ON THE FRONTIERS OF THE UNITED STATES.

PREAMBLE.

1. At or convenient to the principal ports of the United States, quarantine stations should be equipped with all appliances for the inspection and treatment of vessels, their passengers, crews, and cargoes.

2. At all other ports where such provisions have not been made inspection stations should be maintained.

3. An inspection service should be maintained at every port throughout the year.

4. At a fully equipped quarantine station there should be adequate provision for boarding and inspection, apparatus for mechanical cleaning of vessels, apparatus for steam disinfection, apparatus for disinfection with sulphur dioxide, apparatus for disinfecting solutions, hospitals for contagious and doubtful cases, detention barracks for suspects, bathing facilities, crematory, and sufficient supply of good water.

5. The personnel of quarantine stations in the yellow-fever zone and on fruiters bound for Southern ports should be immune against yellow fever.

6. At quarantine stations all articles liable to convey infection should be handled only by the employés of said station, unless the services of the crew are indispensable.

7. Vessels having been treated at national quarantine stations that are located a considerable distance from the ports of entry of said vessels may be inspected by the local quarantine officer, and, if for any sanitary reason it is considered inadvisable to admit the vessel, he should report the facts immediately, by telegraph, when possible, to the Supervising Surgeon-General Marine Hospital Survice, detaining the vessel pending his action.

8. The following regulations are the required minimum standard and do not prevent the addition of such other rules as, for special reasons, may be legally made by State or local authorities.

ARTICLE I.—INSPECTION.

1. Vessels arriving at ports of the United States under the following conditions shall be inspected by a quarantine officer prior to entry:

A. Any vessel with sickness on board.

B. All vessels from foreign ports.

C. Vessels from domestic ports where cholera or yellow fever prevails or where smallpox or typhus fever prevails in epidemic form.

EXCEPTIONS.—Vessels not carrying passengers on inland waters of the United States. Vessels from the Pacific and Atlantic coasts of British America, provided they do not carry persons or effects or persons nonresident in America for the sixty days next preceding arrival, and provided always that the port of departure be free from quarantinable disease. Vessels from other foreign ports via these excepted ports shall be inspected.

D. Vessels from foreign ports carrying passengers having entered a port of the United States without complete discharge of passengers and cargo. Such vessels shall be subject to a second inspection before entering any other port. Vessels from ports suspected of infection with yellow fever, having entered a port north of the southern boundary of Maryland without disinfection, shall be subjected to a second inspection before entering any port south of said latitude during the quarantine season of such port.

2. The inspections of vessels required by these regulations shall be made by daylight, except in case of vessels in distress.

3. In making the inspection of a vessel, the bill of health and clinical record of all cases treated during the voyage, crew and passengers' lists and manifests, and

when necessary the ship's log shall be examined. The crew and passengers shall be mustered and examined and compared with the lists and manifests, and any discrepancies investigated.

4. No person except the quarantine officer, his employés, United States customs officers, or agents of the vessel shall be permitted to board any vessel subject to quarantine inspection, until after the vessel has been inspected by the quarantine officer and given its discharge.

ARTICLE II.—QUARANTINE.

1. For the purpose of these regulations, the quarantinable diseases are cholera (cholerine), yellow fever, smallpox, typhus fever, and leprosy.

2. Vessels arriving under the following conditions shall be placed in quarantine:

A. With quarantinable disease on board.

B. Having had such on board during the voyage or within thirty days next preceding arrival; or, if arriving in the quarantine season, having had yellow fever on board after March 1 of the current year, unless satisfactorily disinfected thereafter.

C. From ports infected with cholera, or where typhus fever prevails in epidemic form, coming directly or via another foreign port, or via United States ports, unless they have complied with the United States quarantine regulations for foreign ports; also vessels from noninfected ports, but bringing persons or cargo from places infected with cholera, yellow fever, or where typhus fever prevails in epidemic form, except as subsequently noted.

D. From ports where yellow fever prevails, unless disinfected in accordance with these regulations, and not less than five days have elapsed since such disinfection.

EXCEPTIONS.—The following exceptions may be made to Rules C and D with regard to vessels from ports quarantined against on account of yellow fever:

(1) Vessels arriving during certain seasons of the year, to wit, from November 1 to May 1, may be admitted to entry.

(2) Vessels bound for ports in the United States north of the southern boundary of Maryland, with good sanitary condition and history, having had no sickness on board at ports of departure en route or on arrival, provided they have been five days from last infected or suspected port, may be allowed entry at port of destination. But if said vessels carry passengers destined for places south of this latitude the baggage of said passengers shall be disinfected.

In making an inspection of a vessel, if from a port where yellow fever prevails, and between May 1 and November 1 of any year, the inspector shall ascertain the destination of each passenger thereon, and if bound for places south of the southern boundary of Maryland the baggage of such passenger shall be disinfected according to the rules for such articles infected with yellow fever. Such baggage shall be labeled.

(3) Vessels engaged in the fruit trade from ports declared safe for this purpose by the Supervising Surgeon-General Marine-Hospital Service may be admitted to entry without detention, provided that they carry no passengers and have carried no passengers from one port to another and have no household effects or personal baggage in cargo, and have complied with the special rules and regulations made by the Secretary of the Treasury with regard to vessels engaged in said trade.

3. All persons arriving on vessels having had smallpox on board must be vaccinated or show satisfactory evidence of recent vaccination or of having had smallpox, or be detained in quarantine for not less than fourteen days, and all effects and compartments liable to convey infection disinfected.

4. All passengers occupying apartments other than first or second cabin shall be vaccinated prior to entry, unless they can show that they have had smallpox, or have been recently successfully vaccinated, or be detained in quarantine fourteen days.

5. Vessels arriving at quarantine with leprosy on board shall not be granted pratique until the leper with his or her baggage has been removed from the vessel to the quarantine station.

No case of leprosy will be landed.

If the leper is an alien passenger and the vessel is from a foreign port, action will be taken as provided by the immigration laws and regulations of the United States.

If the leper is an alien and a member of the crew and the vessel is from a foreign port, said leper shall be detained at the quarantine at the vessel's expense, until taken aboard by the same vessel when outward bound.

ARTICLE III.—GENERAL REQUIREMENTS AT QUARANTINES.

1. Pilots bringing infected vessels will be detained in quarantine a sufficient time to cover the period of incubation of the decease for which the vessel is quarantined, if, in the opinion of the quarantine officer, such pilots have been exposed to infection. The dunnage of pilots shall be disinfected when necessary.

2. No direct communication shall be allowed between quarantine, or any vessel in quarantine, and any person or place outside, and no communication except under the supervision of the quarantine officer.

3. No ballast shall be allowed to leave the quarantine station unless disinfected.

4. Where it is impossible to disinfect cargo *in situ*, it shall be removed and disinfected in the manner provided for articles of their class in these regulations; such articles to be unpacked and so arranged as to allow the disinfectant used to reach every part of all surfaces of said articles.

5. Vessels arriving at any port of the United States, having cholera or yellow fever aboard during the quarantine season, shall be remanded to an anchorage set apart for infected vessels, and there to remain until after the discharge of the passengers and purification of the vessel.

6. All passenger baggage disinfected under the requirements of these regulations shall be labeled.

ARTICLE IV.—TREATMENT IN QUARANTINE OF CHOLERA-INFECTED VESSELS.

1.[1] Remove all passengers from the vessel and all of the crew (if cholera has occurred on board) save those necessary to care for her. Place the sick in hospital and carefully isolate those specially suspected. Segregate the remainder in small groups. No communication shall be held between these groups. Those believed to be especially capable of conveying infection must not enter the barracks until they are bathed and furnished with sterile clothing; nor shall any material capable of conveying infection be taken into the barracks, especially food.

2. If cholera has occurred in the steerage, all occupants thereof must be bathed and their clothing disinfected.

3. At once proceed with the disinfection of the hand baggage.

4. All baggage and effects accompanying steerage passengers, and any other baggage or effects that may have been exposed to infection, must be disinfected.

5. Such articles of cargo as are liable to convey infection must be disinfected.

6. All living apartments and furniture and such other portions of a vessel as are liable to convey infection shall be disinfected.

7. On cholera-infected vessels the water supply must be changed without delay, the casks or tanks disinfected by steam or 10 per cent solution of potassium permanganate, and after thorough rinsing refilled from a source of undoubted purity, or the water supplied must have been recently boiled.

8. Nothing shall be thrown overboard from a cholera-infected vessel, not even deck sweepings. Such things shall be burned in the furnace or in a place specially designated, but not in the galley.

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[1] It is required only if cholera has occurred on board.

ARTICLE V.—DISINFECTION, ETC.

1. *Holds.*—The disinfection of iron vessels shall be as follows:

(*a*) With cargo: If cargo is so stowed as to admit of disinfection, it and the hold may be disinfected without breaking bulk, except to such a degree as to make disinfection practicable, by sulphur dioxide, 10 per cent per volume strength, for not less than twenty-four hours' exposure.

(*b*) Without cargo: After mechanical cleansing, the hold (1) to be thoroughly washed with an acid solution of bichloride of mercury, 1 to 800 (mercury 1 part, hydrochloric acid 2 parts, water 800 parts), applied under pressure to all surfaces by means of a hose; (2) by sulphur dioxide, 10 per cent per volume strength, for twenty-four hours.

2. *Steerage and forecastle.*—When possible to obtain it,

(*a*) The steerage and forecastle shall be disinfected by steam; the temperature in all parts of these compartments to be not less than 100° C. for not less than thirty minutes after such temperature has been reached.

(*b*) When steam can not be obtained these compartments shall be treated in the same manner as required in the disinfection of the empty hold.

3. All bedding and furnishings of the steerage and forecastle to be left in place during the disinfection by steam.

If steam disinfection of steerage is not used, such articles must be removed under the strictest sanitary precautions for disinfection by steam or burning.

4. The bedding, fabrics, and carpets should be removed and disinfected by steam or by boiling.. After thorough mechanical cleansing the woodwork and all other exposed surfaces shall be washed with an acid solution of bichloride of mercury, 1 to 1,000, or a 3 per cent solution of pure carbolic acid. Fabrics which can not be removed shall be thoroughly saturated with a solution of bichloride of mercury, 1 to 1,000, or a 3 per cent solution of pure carbolic acid.

5. The water ballast of a vessel coming from a cholera-infected port should be discharged at sea, or, if discharged in fresh or brackish water, must be previously disinfected; the tanks to be flushed and refilled with sea water or disinfected.

6. For a wooden vessel the treatment is as above, except that exposure of the hold and living apartments to sulphur dioxide, 10 per cent volume, must precede the other treatment. This exposure must be, for the hold, forty-eight hours, and for living apartments, twelve hours.

7. All solid ballast to be discharged or disinfected previous to disinfection of hold. All ballast discharged in fresh water to be disinfected by saturation with or immersion in an acid solution of bichloride of mercury, 1 to 800. Clear, hard, close-grained rock may be permitted to remain on board, but only after disinfection by immersion in an acid solution, 1 to 800, of bichloride of mercury. Ballast removed from vessels must not be taken from the quarantine station.

ARTICLE VI.—DETENTION OF PASSENGERS ON ACCOUNT OF CHOLERA.

1. The people detained shall be inspected by the physician twice daily, and be under his constant surveillance, and no intercourse will be allowed between different groups while in quarantine.

2. No direct communication shall be allowed between any person detained in quarantine and anyone not in quarantine, except through the quarantine officer or, by his order, through his agents.

3. The water and food supply will be strictly guarded to prevent contamination, and issued to each group separately.

4. Food of a simple character, sufficient in quantity, thoroughly cooked, shall be issued to those detained in quarantine. No fruit shall be permitted.

5. Cleanliness of quarters and of person shall be enjoined and enforced daily. Disinfection shall be used where there is any possibility of infection.

6. Water-closets, urinals, privies, or troughs shall be provided, and their contents disinfected before they are discharged.

7. In any group in which cholera appears the sick will be immediately isolated in hospital, and the remaining persons in the group shall be bathed and their effects be disinfected, then removed to other quarters, if possible, and the compartment disinfected.

8. No direct communication shall be allowed between the physician and attendants of the hospital and those detained in quarantine.

No persons shall be discharged from quarantine until five days have elapsed since the last exposure to infection and a final disinfection of such effects as were taken to barracks.

No convalescent from cholera shall be discharged from quarantine until after a sufficient time has elapsed to insure his freedom from infection.[1]

9. The body of no person dead of cholera shall be allowed to pass through quarantine. The body should be cremated if practicable. If not, it should be wrapped without preliminary washing in a sheet saturated with a solution of bichloride of mercury, 1 to 500, and buried, surrounded by caustic lime.

Article VII.—Disinfection of Personal Effects of Passengers and Crew and Cargo.

1. Clothing, bedding, and articles not injured by steam shall be disinfected—

(*a*) By exposure to steam at a temperature of 100° to 102° C. for thirty minutes after such temperature has been reached.

(*b*) By boiling for fifteen minutes; all articles to be submerged.

(*c*) By a thorough saturation in a solution of bichloride of mercury, 1 to 1,000, and allowed to dry before washing.

2. Articles injured by steam (rubber, leather, etc.) and containers, to the disinfection of which steam is inapplicable, shall be disinfected by thoroughly wetting all surfaces with a solution of bichloride of mercury, 1 to 800, or a 5 per cent solution of carbolic acid, and allowed to dry in open air.

3. Cooking and eating utensils, by immersing in boiling water or steam.

4. All rags and old textile fabrics used in the manufacture of paper, and all old gunny, old jute, etc., fit only for remanufacture, gathered, collected, packed, or handled in any port or place where cholera (cholerine) or yellow fever exists, or where smallpox or typhus fever prevails in epidemic form, and for thirty days after the port or place shall be officially declared free from such diseases or epidemic, shall be denied entry into any port of the United States.

5. No rags or old textile fabrics used in the manufacture of paper, or articles enumerated in the preceding paragraph, which have not been disinfected in accordance with Article VII, paragraph 3, of the United States Quarantine Regulations for foreign ports, shall be admitted into the United States.

(Old jute bags; old cotton bags; old rope; new cotton and linen cuttings from factories, not included.)

Article VIII.—Treatment of Vessels Infected or Suspected of being Infected with Yellow fever.

1. Where practicable, at once remove the sick to hospital; remove and isolate all persons not required for the care of the vessel.

2. If the hold is deemed infected, there shall be a preliminary disinfection as hereinafter provided.

3. The bilge should be cleansed with sea water, if possible, before disinfection, and the hold rendered mechanically clean.

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[1] To be determined by bacteriological examination.

4. All ballast, except close-grained, hard rock, must be discharged. This may be retained aboard if disinfected by immersion in an acid solution of bichloride of mercury, 1 to 800.

5. After discharge or disinfection of ballast the vessel should be disinfected.

6. If it is so stowed as to admit of disinfection, the cargo and the hold may be disinfected without breaking bulk, except to such a degree as to render disinfection practicable.

It shall be as follows:

Holds to be treated with sulphur dioxide, 10 per cent strength per volume, forty-eight hours' exposure for iron vessels, seventy-two hours' exposure for wooden vessels.

7. Empty holds to be disinfected as follows:

(*a*) If of iron, by sulphur dioxide gas, 10 per cent strength per volume, for twelve hours' exposure, followed by washing with an acid solution of bichloride of mercury, 1 to 800, applied under pressure to all surfaces by means of a hose.

(*b*) If of wood, by the same methods as the preceding, save that the exposure to sulphur dioxide gas shall be for forty-eight hours; air streaks to be open.

8. Cabin, forecastle, etc., after mechanical cleansing, to be first treated with sulphur dioxide, not less than 6 per cent strength per volume, twenty-four hours' exposure. Then (after cleansing with water, if desired), wash all exposed surfaces with a solution of bichloride of mercury, 1 to 800, or pure carbolic acid, 3 per cent.

9. Clothing, bedding, and all fabrics which can be removed, not injured by steam, shall be disinfected.

(*a*) By exposure to steam at a temperature of 100° to 102° C. for thirty minutes after such temperature has been reached.

(*b*) By boiling for fifteen minutes; all articles to be submerged.

(*c*) By a thorough saturation in a solution of bichloride of mercury, 1 to 1,000, and allowed to dry before washing.

10. Articles injured by steam (rubber, leather, etc.), and containers, to the disinfection of which steam is inapplicable, shall be disinfected by (*a*) thoroughly wetting all surfaces with a solution of bichloride of mercury, 1 to 800, or a 5 per cent solution of pure carbolic acid, and allowed to dry in open air; or (*b*) by exposure to the sulphur fumigation, in cabin, forecastle, or hold.

11. The personnel of the vessel shall be detained five days from completion of the disinfection.

12. If the vessel has been disinfected under the supervision of an accredited medical officer of the United States at the port of departure, the period of quarantine may date from completion of such disinfection, and shall not be less than five days.

ARTICLE IX.

Passenger traffic may be allowed during the quarantine season from any port infected with yellow fever to any port of the United States south of the southern boundary of Maryland, under the following conditions:

(*a*) Vessels to be of iron and clean immediately prior to taking on passengers.

(*b*) The vessel must lie at moorings in the open harbor and not approach the wharves, nor must the crew be allowed ashore at the port of departure.

(*c*) All passengers and crew must be immune to yellow fever and so certified by the United States medical officer.[1]

(*d*) All baggage which has not been disinfected at the port of departure by the United States medical officer, or which is not in bond for points north of the southern boundary of Maryland, shall be disinfected at the quarantine at the port of arrival; no bedding or household effects to be allowed to enter.

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[1] The evidence of immunity which may be accepted by the sanitary inspector is: First. Proof of continued residence in an endemic focus of yellow fever for ten years. Second. Proof of previous attack of yellow fever.

ARTICLE X.—MISCELLANEOUS.

1. The treatment of vessels infected with typhus fever shall be the same as that prescribed for yellow fever.

2. The detention of passengers and crew for smallpox and typhus fever shall cover the period of incubation of the disease, the time of detention to commence from the date of last exposure; typhus fever, not less than twenty days; smallpox, not less than fourteen days.

3. Vessels detained at any national quarantine will be subject to such additional rules and regulations as may be promulgated from time to time by the Supervising Surgeon-General.

4. The following is the form of certificate which shall be issued to the vessel by the health officer when she is released from quarantine:

——, —— ——, 189—.

I CERTIFY that ——, of ——, from ——, has in all respects complied with the quarantine regulations prescribed by the Secretary of the Treasury, and that in my opinion she will not convey quarantinable disease. Said vessel is this day granted free pratique.

—— ——,

Health (Quarantine) Officer, Port of ——.

ARTICLE XI.—INSPECTION OF STATE AND LOCAL QUARANTINES.

In the performance of the duties imposed upon him by the act of February 15, 1893, the Supervising Surgeon-General of the Marine-Hospital Service shall, from time to time, personally or through a duly detailed officer of the Marine-Hospital Service, inspect the maritime quarantines of the United States, State and local, as well as national, for the purpose of ascertaining whether the quarantine regulations prescribed by the Secretary of the Treasury have been or are being complied with. The Supervising Surgeon-General, or the officer detailed by him as inspector, shall at his discretion visit any incoming vessel, or any vessel detained in quarantine, and all portions of the quarantine establishment for the above-named purpose and with a view to certifying, if need be, that the regulations have been, or are, being enforced.

ARTICLE XII.—CANADIAN AND MEXICAN FRONTIERS.

1. When practicable, alien immigrants arriving at Canadian and Mexican ports, destined for the United States, shall be inspected at the port of arrival by the United States consular or medical officer, and be subjected to the same sanitary restrictions as are called for by the rules and regulations governing United States ports.

2. Inspection cards will be issued by the consular or United States medical officer at the port of arrival to all such alien immigrants, and labels affixed to their baggage, as is required in the case of those coming direct from foreign ports to any port of the United States.

3. Whenever alien immigrants are not inspected at the port of arrival by the United States consular or medical officer, they shall enter the United States through certain designated places on the frontier, where they shall be inspected for the purpose of preventing the introduction of quarantinable disease. This inspection shall be held by daylight.

4. If any person be found suffering from a quarantinable disease, or presumably infected, he shall be denied entry so long as danger of conveying the infection exists.

5. Any baggage or other effects believed to be infected shall be refused entry until made safe by a proper disinfection.

6. Persons coming from localities where smallpox is prevailing in epidemic form shall not be allowed entry without vaccination, unless they are protected by a previous attack of the disease or a recent successful vaccination.

7. Persons coming from localities where typhus fever prevails in epidemic form shall not be allowed entry until they have been away from such locality fourteen days and their baggage disinfected.

8. During the quarantine season persons coming from places where yellow fever prevails will not be permitted to enter until they have been away from such locality five days and their baggage has been disinfected. But persons immune to yellow fever will not be detained.

9. No common carrier which is infected, or suspected of being infected, shall be allowed to enter the United States until after such measures have been taken as will render it safe.

10. Articles of merchandise, personal effects, etc., which are capable of conveying infection, and which are presumably infected, shall not be allowed entry into the United States until after disinfection.

11. The methods of disinfection shall be those prescribed in the rules and regulations made for the maritime quarantines of the United States.

Immigrants who, with their baggage, have been inspected at a port of the United States by a quarantine officer upon landing, will be exempt from further quarantine inspection when reentering the United States from Canada, unless there is reason to believe that disease has developed among such immigrants since such landing and inspection.

COMMENTS ON THE REVISED REGULATIONS. (FOREIGN.)

In the foreign regulations the bill of health is changed in form and omits the certificate of disinfection as unnecessary, the bill itself covering all points. It is also simplified.

The visa of the bill of health has been changed to a supplemental bill of health and covers sanitary precautions which may have to be taken which were not covered by the former visa of the bill.

Article II relates to inspection, does not go into details of requirements so exactly, removes the provision requiring the inspection to be made within six hours before sailing, and makes other provisions more rational concerning the inspection.

The regulation with regard to rags has been so changed as to allow new cuttings to come in without being classed as rags.

Certain articles of merchandise, such as wool, hair, etc., from districts where cholera prevails, and hides not chemically cured may be shipped without disinfection thirty days after last exposure. Hides chemically cured may be shipped at any time.

Hereafter coverings of merchandise shipped from or through an infected port or place will have to be disinfected only when the consul or medical officer has reason to believe that they have become infected. Under the old regulations they had to be disinfected if coming from an infected port or place.

With regard to steerage passengers, provision is made in the new Regulations (Art. V, par. 6) for allowing the immigrants who come from healthy districts and are simply passing through the infected city to do so, provided they are carried through without any danger of infection and no communication is allowed with the infected locality.

With regard to fresh fruits, under the present Regulations they may be shipped under such sanitary supervision as will enable the inspector to certify that they have not been exposed to infection.

As to dried fruits, dates, figs, etc., which come from remote portions of the world, no restriction is placed upon their shipment other than that provided for in paragraph 4 of Article IV, which would require disinfection or refusal to allow shipment of the same if the consul or medical officer believed that they were infected. Practically the consul or medical officer will not believe they are infected unless he has very good reason for so doing, in which case they should not be shipped; but no special restrictions are placed upon dried fruits.

Under the new Regulations certain food products, such as unsalted meats, sausages, dressed poultry, cheese, bread, etc., coming from cholera-infected localities, may be shipped if the consul or medical officer is satisfied that they were not exposed to infection in a cholera-infected district. Heretofore they were forbidden absolutely.

It will be seen that the vexed question with regard to importation of rags has been definitely settled, the rule with regard to rags being as follows:

All old rags destined for the United States must be disinfected in accordance with prescribed methods and their disinfection certified to by a United States consul at all times, whether epidemic disease is prevailing or not. During the prevalence of cholera in any district, rags gathered in that district shall not be shipped to the United States until thirty days have elapsed after the expiration of the epidemic, and then only after disinfection.

Another important restriction relates to bedding, which, coming from a district known to be infected, or as to the origin of which no positive evidence can be obtained, must be disinfected. Feathers which have been used for bedding must invariably be disinfected by steam, and any bedding presumably infected which can not be disinfected must not be shipped. There is another important restriction relating to the baggage of immigrants. The Regulations require that all baggage shall now be labeled before shipment to the United States. If from a noninfected country and perfectly safe, the label is simply an inspection label on red background; if from a suspected or infected territory, the baggage must be marked "Disinfected," which means that it has been disinfected under consular supervision. By this means the baggage of immigrants, which is considered, next to the immigrants themselves the greatest source of danger in the importation of disease, becomes subject to close surveillance at foreign ports and bears the mark of surveillance on arrival in the United States.

COMMENTS ON THE REVISED REGULATIONS. (DOMESTIC.)

There is added a provision forbidding persons, excepting quarantine officers, customs officers, or agents of vessels, boarding a vessel until, after inspection.

Article II, exception 3, of the old Regulations is changed because vessels arriving at ports of call from yellow-fever ports must be placed in quarantine, and all communication with the shore—it is provided in Article III, paragraph 2, of the new Regulations—must be under the supervision of the quarantine officer.

New requirements are made with regard to pilots, their detention in quarantine, and the disinfection of the dunnage when necessary.

Baggage disinfected at a quarantine must be so labeled.

Regarding detention of passengers on account of cholera, the new Regulations require constant surveillance of the detained passengers by a physician, and forbid direct communication between the physician or hospital attendants and those that are held under suspicion in the quarantine; in other words, they require a physician to be specially detailed for the care of the sick, who shall have no communication with the well.

The new Regulations also forbid direct communication between any person detained in quarantine and anyone not in quarantine, except through the quarantine officer, or by his order through his agents.

The period of detention on board of a vessel infected or suspected of being infected with yellow fever is fixed at five days from the completion of the disinfection, instead of three days under the old Regulations, which was permitted provided all packed effects of passengers and crew, and the vessel itself, were handled exclusively by quarantine employees.

The new Regulations require that baggage coming from an infected yellow-fever port to any port of the United States south of the southern boundary of Maryland shall be disinfected at the quarantine at the port of arrival, unless it has been disinfected at the port of departure by a United States medical officer, or unless it is in bond for transit to some point north of the southern boundary of Maryland.

The new Regulations require stopping at quarantine of all cases of leprosy, and, if alien passengers, to be treated in accordance with the immigration act; if alien members of a crew, to be taken again by the vessel on her outward voyage.

This regulation in the main was formerly in existence under a Department Circular, No. 130, dated December 23, 1889.

Special provision is made for the conduct of the fruit trade in Southern ports to permit the same under sanitary regulations.

A prescribed form of pratique is added to the new Regulations.

The regulations for the Canadian and Mexican frontiers are mainly new matter.

AMENDMENTS TO QUARANTINE REGULATIONS.

[Circular.]

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
Washington, D. C., August 16, 1894.

To Officers of the Treasury Department, Consular Officers, and others concerned:

Referring to Department circular, dated April 26, 1894, United States Quarantine Laws and Regulations, the following amendment is hereby made to the "Quarantine Regulations to be observed at ports and on the frontiers of the United States," viz:

Article VIII, paragraph 11, amended to read: "The personnel of the vessel shall be detained five days from the completion of the disinfection, or three days if all baggage, effects of passengers and crew, and the vessel, are handled exclusively by quarantine employees."

J. G. CARLISLE, *Secretary.*

REGULATIONS REGARDING CONSULAR BILLS OF HEALTH FROM CERTAIN PORTS IN CANADA AND MEXICO.

[Circular.]

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
Washington, D. C., October 17, 1894.

To Officers of the Treasury Department, Consular Officers, and others concerned:

The following act passed both Houses of Congress during the last session and was approved by the President August 18, 1894:

AN ACT to amend section 2 of the act approved February 15, 1893, entitled "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service."

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section two of the act approved February fifteenth, eighteen hundred and ninety-three, entitled "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service," is hereby amended by adding to the end of said section the following:

"The provisions of this section shall not apply to vessels plying between foreign ports on or near the frontiers of the United States and ports of the United States adjacent thereto; but the Secretary of the Treasury is hereby authorized, when, in his discretion, it is expedient for the preservation of the public health, to establish regulations governing such vessels."

Under the above act, vessels plying between Canadian ports on the St. Croix River, the St. Lawrence River, the Niagara River, the Detroit River, Lake St. Clair and St. Clair River, and the St. Marys River, and adjacent ports in the United States on the same waters; also Mexican ports on the Rio Grande River and adjacent ports in the United States, are exempt from the provisions of section 2 of the act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service, approved February 15, 1893, which requires vessels clearing from a foreign port for a port in the United States to obtain from the consular officer a bill of health.

During the prevalence of any of the quarantinable diseases at the foreign port of departure, vessels above referred to are hereby required to obtain from the consular officer of the United States, or from the medical officer of the United States, when such officer has been detailed by the President for this purpose, a bill of health, in duplicate, in the form prescribed by the Secretary of the Treasury, Quarantine Regulations of the United States, 1894.

J. G. CARLISLE, *Secretary.*

INTERSTATE QUARANTINE REGULATIONS.

The same board which revised the Maritime Quarantine Regulations were also instructed to prepare Interstate Quarantine Regulations, which after revision were duly promulgated as follows:

INTERSTATE QUARANTINE REGULATIONS.

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
Washington, D. C., September 27, 1894.

To medical officers of the Marine-Hospital Service,
State and local health authorities, and others concerned:

In accordance with section 3 of the act of February 15, 1893, the following regulations are hereby promulgated to prevent the introduction of contagious diseases into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia. Additional regulations will be promulgated from time to time, as circumstances demand.

The regulations of the Department issued August 12, 1893, to prevent the spread of yellow fever are hereby rescinded.

J. G. CARLISLE, *Secretary.*

INTERSTATE QUARANTINE REGULATIONS.

ARTICLE I.

QUARANTINABLE DISEASES.

(1) For the purposes of these regulations the quarantinable diseases are cholera (cholerine), yellow fever, smallpox, typhus fever, leprosy, and plague.

ARTICLE II.

NOTIFICATION.

(1) State and municipal health officers should immediately notify the Supervising Surgeon-General of the United States Marine-Hospital Service by telegraph or by letter of the existence of any of the above-mentioned quarantinable diseases in their respective States or localities.

ARTICLE III.

GENERAL REGULATIONS.

(1) Persons suffering from a quarantinable disease shall be isolated until no longer capable of transmitting the disease to others. Persons exposed to the infection of a quarantinable disease shall be isolated, under observation, for such a period of time as may be necessary to demonstrate their freedom from the disease.

All articles pertaining to such persons, liable to convey infection, shall be disinfected as hereinafter provided.

(2) The apartments occupied by persons suffering from quarantinable disease, and adjoining apartments when deemed infected, together with articles therein, shall be disinfected upon the termination of the disease.

(3) Communication shall not be held with the above-named persons and apartments, except under the direction of a duly qualified officer.

(4) All cases of quarantinable disease, and all cases suspected of belonging to this class, shall be at once reported by the physician in attendance to the proper authorities.

(5) No common carrier shall accept for transportation any person suffering with a quarantinable disease, nor any infected article of clothing, bedding, or personal property.

The body of any person who has died of a quarantinable disease shall not be transported save in hermetically sealed coffins, and by the order of the State or local health officer.

(6) In the event of the prevalence of smallpox, all persons exposed to the infection, who are not protected by vaccination or a previous attack of the disease, shall be at once vaccinated or isolated for a period of fourteen days.

(7) During the prevalence of cholera all the dejecta of cholera patients shall be at once disinfected as hereinafter provided to prevent possible contamination of the food and water supply.

ARTICLE IV.

YELLOW FEVER.

In addition to the foregoing regulations contained in Article III, the following special provisions are made with regard to the prevention of the introduction and spread of yellow fever:

(1) Localities infected with yellow fever and localities contiguous thereto should be depopulated as rapidly and as completely as possible, so far as the same can be safely done, persons from noninfected localities and who have not been exposed to infection being allowed to leave without detention. Those who have been exposed, or who come from infected localities, shall be required to undergo a period of detention and observation of ten days from the date of last exposure in a camp of probation or other designated place. Clothing and other articles capable of conveying infection shall not be transported to noninfected localities without disinfection.

(2) Persons who have been exposed may be permitted to proceed without detention to localities incapable of becoming infected and whose authorities are willing to receive them and after arrangements have been perfected, to the satisfaction of the proper health officer, for their detention in said localities for a period of ten days.

(3) The suspects who are isolated under the provisions of paragraph 1, Article III, shall be kept free from all possibility of infection.

(4) So far as possible, the sick should be removed to a central location for treatment.

(5) Buildings in which yellow fever has occurred, and localities believed to be infected with said disease, must be disinfected as thoroughly as possible.

(6) As soon as the disease becomes epidemic the railroad trains carrying persons allowed to depart from a city or place infected with yellow fever shall be under medical supervision.

(7) Common carriers from the infected districts, or believed to be carrying persons and effects capable of conveying infection, shall be subject to a sanitary inspection, and such persons and effects shall not be allowed to proceed, except as provided for by paragraph 2.

(8) At the close of an epidemic the houses where sickness has occurred, and the contents of the same, and houses and contents that are presumably infected, shall be disinfected as hereinafter prescribed.

ARTICLE V.

DISINFECTION.

FOR CHOLERA.

(1) The dejecta and vomited matters of cholera patients shall be received into vessels containing an acid solution of bichloride of mercury (bichloride of mercury, 1 part; hydrochloric acid, 2 parts; water, 1,000 parts) or other efficient germicidal agent.

(2) All bedding, clothing, and wearing apparel soiled by the discharges of cholera patients shall be disinfected by one or more of the following methods:

(*a*) By complete immersion for thirty minutes in one of the above-named disinfecting solutions.

(*b*) By boiling for fifteen minutes, all articles to be completely submerged.

(*c*) By exposure to steam at a temperature of 100° to 200° C. for thirty minutes after such temperature is reached.

(3) Any woodwork or furniture contaminated by cholera discharges shall be disinfected by thorough washing with a germicidal solution as provided in paragraph 1, Article III.

FOR YELLOW FEVER.

(4) Apartments infected by occupancy of patients sick with yellow fever shall be disinfected by one or more of the following methods:

(*a*) By thorough washing with one of the above-named germicidal solutions. If apprehension is felt as to the poisonous effects of the mercury, the surfaces may, after two hours, be washed with clear water.

(*b*) Thorough washing with a 5 per cent solution of pure carbolic acid.

(*c*) By sulphur dioxide, twenty-four to forty-eight hours' exposure, the apartments to be rendered as air-tight as possible.

(5) Bedding, wearing apparel, carpets, hangings, and draperies infected by yellow fever shall be disinfected by one of the following methods:

(*a*) By exposure to steam at a temperature of 100° to 102° C. for thirty minutes after such temperature is reached.

(*b*) By boiling for fifteen minutes, all articles to be completely submerged.

(*c*) By thorough saturation in a solution of bichloride of mercury 1-1000, the articles being allowed to dry before washing.

Articles injured by steam (rubber, leather, containers, etc.), to the disinfection of which steam is inapplicable, shall be disinfected by thoroughly wetting all surfaces with (*a*) a solution of bichloride of mercury 1-800, or (*b*) a 5 per cent solution of carbolic acid, the articles being allowed to dry in the open air prior to being washed with water, or (*c*) by exposure to sulphur fumigation in an apartment air-tight, or as nearly so as possible.

FOR SMALLPOX.

(6) Apartments infected by smallpox shall be disinfected by one or both of the following methods:

(*a*) Exposure to sulphur dioxide for twenty-four to forty-eight hours.

(*b*) Washing with a solution of bichloride of mercury 1-1000, or a 5 per cent solution of pure carbolic acid.

(7) Clothing, bedding, and articles of furniture exposed to the infection of smallpox shall be disinfected by one or more of the following methods:

(*a*) Exposure to sulphur dioxide for twenty-four to forty-eight hours.

(*b*) Immersion in a solution of bichloride of mercury 1-1000, or 5 per cent solution of pure carbolic acid.

(*c*) Exposure to steam at a temperature of 100° to 102° C. for thirty minutes after such temperature is reached.

(*d*) Boiling for fifteen minutes, the articles to be completely submerged.

FOR TYPHUS FEVER.

(8) Apartments infected by typhus fever shall be disinfected by one or both of the following methods:

(*a*) Exposure to sulphur dioxide for twenty-four to forty-eight hours.

(*b*) Washing with a solution of bichloride of mercury 1-1000, or a 5 per cent solution of pure carbolic acid.

(9) Clothing, bedding, and articles of furniture exposed to the infection of typhus fever shall be disinfected by one or more of the following methods:

(*a*) Exposure to sulphur dioxide for twenty-four to forty-eight hours.

(*b*) Immersion in a solution of bichloride of mercury 1-1000, or a 5 per cent solution of pure carbolic acid.

(*c*) Exposure to steam at a temperature of 100° to 102° C. for thirty minutes after such temperature is reached.

(*d*) Boiling for fifteen minutes, the articles to be completely submerged.

LEGAL OPINIONS RELATING TO THE LAW OF FEBRUARY 15, 1893.

The following opinion was given by the Solicitor of the Treasury upon the right of the Government to inspect State and municipal quarantines:

DEPARTMENT OF JUSTICE,
OFFICE OF THE SOLICITOR OF THE TREASURY,
Washington, D. C., April 24, 1893.

SIR: I have by reference a letter of Dr. Wyman, Supervising Surgeon-General Marine-Hospital Service, under date of April 19, inquiring with regard to the right of the Government, under the quarantine act approved February 15, 1893, "to inspect, at such times as may be necessary, a State or municipal quarantine of the United States."

The act referred to does not expressly provide that State or local quarantines of the United States may be inspected by the Marine-Hospital Service, but it seems to me a fair and reasonable intendment of the law that such power does exist, otherwise the act would be, to an important extent, ineffectual and inoperative. And I fully concur with Dr. Wyman, in the opinion that Congress intended the President should have available sources of information so that he might know with certainty whether the rules and regulations prescribed are being properly enforced.

Section 1 of said act provides " that it shall be unlawful for any merchant ship or other vessel from any foreign port or place to enter any port of the United States except in accordance with the provisions of this act and with such rules and regulations of State and municipal health authorities as may be made in pursuance of, or consistent with, this act." * * *

Section 3 prescribes "that the Supervising Surgeon-General of the Marine-Hospital Service shall, immediately after this act takes effect, examine the quarantine regulations of all State and municipal boards of health, and shall, under the direction of the Secretary of the Treasury, cooperate with and aid State and municipal boards of health in the execution and enforcement of the rules and regulations made by the Secretary of the Treasury to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, and into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia." * * * And further that * * * "at such ports and places within the United States where quarantine regulations exist under the authority of the State or municipality which, in the opinion of the Secretary of the Treasury, are not sufficient to prevent the introduction of such diseases into the United States, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, the Secretary of the Treasury shall, if in his judgment it is necessary and proper, make such additional rules and regulations as are necessary to prevent the introduction of such diseases into the United States from foreign countries, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, and when said rules and regulations have been made they shall be promulgated by the Secretary of the Treasury and enforced by the sanitary authorities of the States and municipalities, where the State or municipal health authorities will undertake to execute and enforce them; but if the State or municipal authorities shall fail or refuse to enforce said rules and regulations the President shall execute and enforce the same and adopt such measures as in his judgment shall be necessary to prevent the introduction or spread of such diseases, and may detail or appoint officers for that purpose."

Section 4 provides "that it shall be the duty of the Supervising Surgeon-General of the Marine-Hospital Service, under the direction of the Secretary of the Treasury, to perform all the duties in respect to quarantine and quarantine regulations which are provided for by this act."

Section 6, relating to the treatment of an infected vessel at a national quarantine station, further provides: "But at any ports where sufficient quarantine provision has been made by State or local authorities the Secretary of the Treasury may direct vessels bound for said ports to undergo quarantine at said State or local station."

It thus appears all through the act that the national quarantine system provided for by Congress has, necessarily, inspective and supervisory powers over the sanitary authorities of the State or municipality.

Besides, it is a well-established and familiar principle of law, that whenever a power is given by a statute, everything necessary to make it effectual or requisite to attain the end is implied, and when a statute gives a right to impose a duty it also confers by implication the power necessary to make the right available or to discharge the duty. (Suth. on Stat. Cons., secs. 341, 343, 344, 345, 390.) And statutes relating to the public health are to be liberally construed. (Dwar. on Stat.)

I am therefore clearly of the opinion that it would be within the scope and intention of the act for the Government to authorize the inspection, by proper officers connected with the Marine-Hospital Service, of the condition of the State or local quarantines.

* * * * * * *

Very respectfully,

F. A. Reeve, *Solicitor.*

The Secretary of the Treasury.

The following is a decision of the Solicitor of the Treasury as to what is understood by the words "entering any port in the United States," as used in the national quarantine act of February 15, 1893:

Department of Justice,
Office of the Solicitor of the Treasury,
Washington, D. C., September 19, 1893.

Sir: The Supervising Surgeon-General Marine-Hospital Service, Dr. Walter Wyman, has addressed a letter to me (inclosing one from Surg. R. D. Murray, on duty at Key West quarantine station), in which he states that a vessel from a foreign port had arrived there without bringing a consular bill of health, as provided for in the national quarantine act of February 15, 1893, and the matter was referred to the collector of customs at Key West, with the request that he enter action against said vessel under the provisions of section 2 of the act. * * *

The question proposed to me is whether the words "entering any port of the United States," as used in said quarantine act, must be held to mean the entry of the vessel at the custom-house.

I do not understand such to be the meaning of the statute. By section 1 it is provided:

"That it shall be unlawful for any merchant ship or other vessel from any foreign port or place to enter any port of the United States, except in accordance with the provisions of this act and with such rules and regulations of State or municipal health authorities as may be made in pursuance of or consistent with this act; and any such vessel which shall enter or attempt to enter any port of the United States in violation thereof shall forfeit to the United States a sum to be awarded in the discretion of the court, not exceeding five thousand dollars," etc.

Section 2 of the act provides, among other things, that—

"Any vessel clearing and sailing from any such port without such bill of health, and entering any port of the United States, shall forfeit to the United States not more than five thousand dollars," etc.

A "port" differs from a "haven," and includes something more. First, it is a place at which vessels may arrive, discharge, or take in their cargoes. Second, it comprehends a ville, city, or borough, called in Latin, capit corpus, for the reception of mariners and merchants, for securing the goods and bringing them to market, etc. Third, it is impressed with a legal character by the civil authority.

By the Roman law a port is defined to be locus conclusus, quo importantur meres et unde exportantur. In other words, a port is a natural or artificial harbor or bay, cove, inlet, or recess of the sea, or a lake or mouth of a river which vessels can enter, and where they can lie safe from injury by storms. In a legal sense, a port is a place where persons or merchandise are allowed to pass into and out of a country—a place where there is a constant resort of vessels for the purpose of loading and unloading, with provisions made for them to do so. A port may exist without a custom-house at all. The port, for instance, of Boston would still be a port or harbor in a physical or geographical sense if the custom-house were removed from there.

I do not think, therefore, that the words "entering any port of the United States," as used in the quarantine act, mean the entry of a vessel at the custom-house.

Very respectfully,

F. A. Reeve, *Solicitor.*

Hon. John G. Carlisle,
Secretary of the Treasury.

The following opinion of the judge of the United States district court for the southern district of Florida is of importance, as it prevents prosecution under the law of February 15, 1893, of small trading vessels without bills of health entering out-of-the-way ports in the State of Florida with the evident intent of smuggling, frequently bringing with them as a crew men who have recently arrived in Havana from Spain and may have contracted yellow fever, thus endangering the coast. Cases of yellow fever have been known to have been landed from these vessels. To meet this situation it is necessary that the quarantine law be amended so that section 1 shall forbid entry to any port or harbor or within the waters of any collection district of the United States, except in accordance with the terms of the law:

UNITED STATES DISTRICT COURT, SOUTHERN DISTRICT OF FLORIDA.

THE UNITED STATES
v. } In admiralty.
THE SCHOONER JAVARINA.

Copy of the opinion filed by the Hon. James W. Locke, judge of the above-entitled court.

On the 8th day of July, 1894, the revenue cutter *McLane*, coming up the west coast of Florida, saw anchored somewhat to the north and west of North Anclote Key several vessels, of which the herein-libeled vessel was one. Upon the approach of the cutter two of them made sail, attempting to pass out to sea, and upon the cutter's giving chase and following them, all of the several vessels made sail and attempted to escape. Upon the cutter's intercepting these vessels that were putting to sea, they were all brought to anchor and boarded by the boarding officer. It was ascertained that they were Spanish smacks, from Havana, and it is reported by the officer that they acknowledged, all of them, to have been at anchor twenty-four hours. The location was in a buoyed channel inside of several buoys marking the entrance to the well-known anchorage within Anclote Key, at a distance of about 2½ miles from shore off North Anclote Key, and perhaps 5 or 6 miles from shores of mainland. The master of the revenue cutter, considering that they had arrived within the limits of a collection district of the United States, and, according to their own admissions, had not reported, considered it his duty to take them under arrest and bring them to the most convenient port of entrance, which was the port of Tampa, which he did. It is shown they had on board at the time certain ship's stores and certain amounts of aguardiente and wine, the amount being in each case, I think, about 30 gallons of each, varying slightly in some cases, more or less wine or aguardiente.

Libels of information were filed in behalf of the Government alleging that these vessels had violated sections 2773, 2774, and 2775 of the Revised Statutes of the United States, as well as the more recent act of Congress providing for protecting the country from epidemic, approved February 15, 1893.

Section 2773 of the Revised Statutes of the United States provides that "if any vessel having arrived within the limits of any collection district from a foreign port, departs or attempts to depart from same, unless to proceed on her way to some more interior district to which she may be bound, before report or entry shall have been made by the master with collector of some district, the master shall be liable to a penalty of $400," and the vessel may be arrested and brought back to the most convenient port of the United States. The first question that may be considered in that connection is what may be considered limits of collection district. The law provides that the collection district in which this seizure is shown to have been made comprises the shores and the waters of the United States and State of Florida for a certain distance. How far can it be considered that the waters of the open sea are included within the term "district"? In designating waters of the United States and of the open sea we have few lines of demarcation, high tide and low tide, and maritime limit of exclusive national jurisdiction of 3 miles, and the extended limit for revenue purposes of 4 leagues; these have all been recognized by civilized nations as limits within which nations could exercise certain rights, each having its peculiar characteristics. When these limits are departed from it is not within the power of a court to determine any other lines within which jurisdiction or rights may be determined. It is contended that these vessels were not within a collection district of the United States, but it can not be considered that a collection district is limited by the lines of either high or low tide, or to the shore and coast. A collection district, I consider, can be bounded by no other than the generally accepted rule of a line drawn 3 miles from shore or coast within that district and that if the vessels seized were within 3 miles of the land, coast, or shore they were within a collection district. There appears nothing in this case to show the arrival of these vessels had not been intentional and deliberate; nothing to show that it was through compulsion or stress of weather. It appears from the testimony, as near as the court can judge, that this place was a general rendezvous, or a resort, or a place of anchorage for a large number of this class of vessels.

It appears that two days before one seizure was made thirteen of this class of vessels arrived and were lying there at anchor; at that time there was no peculiar stress of weather; the custom-house inspector in a small boat sailed out among and between them.

There is no contention that there had been any report or entry, and I find that the letter of the law unquestionably has been violated in this matter.

The next question is of greater importance: Was the intention of the law such as to reach such cases as this? Where the letter of the law appears to have been violated, with an ordinary consideration of the terms, the burden of proof is upon the party defendant to show that the intention of the lawmaker was that the law should not have the force which the ordinary construction of the language would give it. It has been urged that if the law were intended to apply to such cases as this it might oftentimes work a severe hardship upon vessels coming to anchor within 3 miles of a coast from necessity, and that it could not have been intended that such cases could be held to be a violation of law. Taking into consideration the numerous laws of all nations at the time of the enactment of this statute of 1799, which has been embodied in these sections of the Revised Statutes, it can but be considered that it was the intention of Congress at that time to prevent any hovering of commercial or trading vessels along the coast. At that time it was unquestionably deemed necessary that some laws prohibiting vessels arriving and departing at will without restriction, without any report of their character, should be in force, and that is all that is required in section 2773. In that case it is also provided that where a vessel's departure from necessity is through any stress of weather the penalty will not attach. The case of the *Appolon* (9 Wheat., 302) has been cited by the defense to show that this law was not intended to apply to vessels excepting those which were destined and intended for and to ports of the United States. It is true that language of that character is used in the opinion in that case, but it will be found that it did not apply to this section (then section 19 of act of 1799), but applied to another section of the same act, where a right of visitation within 4 leagues of a coast was allowed. Upon careful consideration of all authorities which I have been able to find, I am fully satisfied that not only the language of section 2773 was violated, but that the intention of Congress was that it might be applied to just such cases as this. Unless this section applies to such cases as this, the United States has no law to prevent any foreign-bound vessels from hovering along our coasts, even within a few hundred yards, without entering, reporting, or making their character or presence known. I therefore find that section 2773 was violated, and no excuse has been made that would justify nonprosecution of it.* When we consider the next two sections, 2774 provides that the vessel must have arrived at a port of the United States established by law. The section of the act of 1799, from which that was taken, includes both sections 2774 and 2775, and the language of section 2775 must necessarily refer to such a port as is established in 2774, and that is a port of the United States established by law. The Anclote Harbor was not a port of the United States established by law, neither a port of entrance nor discharge. I therefore find that there was no violation of sections 2774 and 2775. I find no attempt to enter a port which would bring the case within the act of 1893, known as the quarantine regulation. Beyond questions of violation of law in this case, a question of practice has arisen which requires consideration. It is contended that the fine was first against the master and not against the vessel. At the time of the decision in the case of *Appolon*, supra, there was no law providing for the enforcement of a penalty against the master by a proceeding against the vessel, but by the act of 1866, section 3088 of the Revised Statutes, wherever the master has become subject to a penalty the vessel may be held liable and proceeded against by libel. Is it necessary in order to constitute valid right of action against the vessel that there should be a technical imposition of fine and refusal to pay? I find nothing in the statutes or any decision upon the question. The act of 1866, section 3088, Revised Statutes, does not provide that where a penalty has been imposed, and the master refuses to pay, the right of action exists against the vessel, but that where a penalty has been "incurred" the right exists. There is no question in my mind but what a libel could be filed against a vessel without the imposition of a fine or notice to the master that a fine had been imposed upon him.

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* Reversed by United States circuit court of appeals. Opinion of court will be included in the Annual Report for 1895.

ENFORCEMENT OF THE LAW REQUIRING BILLS OF HEALTH.

Among the efforts made by shipmasters to avoid obtaining the prescribed bill of health may be mentioned the case of the steamship *Dago*, which arrived at Baltimore, August 2, 1893.

The following correspondence is self-explanatory:

Office of the Collector of Customs,
Baltimore, October 30, 1893.

Sir: I have the honor to advise your Department that on August 2, 1893, the steamship *Dago* arrived at this port in water ballast, no passengers, 23 in crew, from Bristol, England, via Newport, Wales. The master presented a consular bill of health from the port of call (Newport), but failed to have one from Bristol. As this was in violation of the act approved February 15, 1893, section 2, I declined to enter the vessel before asking the instruction of your Department, which I did by telegraphic communication on the date above mentioned. On the same day I received the following reply, dated at Washington, D. C., and numbered 1256 P:

"*Dago* should be admitted and action taken under laws, as regulations have been duly promulgated at Bristol. Application for remission can be made after action."

In obedience to the foregoing instruction I admitted the vessel to entry and reported the case to the United States district attorney, who instituted procceedings against the *Dago* in the United States district court for the district of Maryland, The case came up for trial on the 21st instant, before Judge Thomas H. Morris, who, after hearing the facts and the arguments submitted by counsel, dismissed the case.

The contention of the district attorney was that the master of the steamship *Dago* should have obtained a bill of health at Bristol and have the same viséed at Newport, in compliance with the provisions of Amendments to Quarantine Regulations, approved February 24, 1893 (Department Circular No. 81, Marine-Hospital Service).

In an oral opinion Judge Morris held, as I understand, that the *Dago*, not having had a cargo on board when she left Bristol, satisfied the provisions of the law by obtaining a consular bill of health at Newport, which was the real point of departure, to all intents and purposes, as far as the facts in the case then before him demonstrated.

Deeming it my duty to inform you of the particulars in this case, I therefore submit this report for such consideration as, in your judgment, it will seem entitled to receive.

Respectfully, yours,
W. M. Marine, *Collector*

Hon. John G. Carlisle,
Secretary of the Treasury, Washington, D. C.

The case having been appealed, the decree of the district court for the district of Maryland was reversed, as will be seen by the following report:

UNITED STATES CIRCUIT COURT OF APPEALS, FOURTH CIRCUIT.

THE UNITED STATES, APPELLANT,
v.
THE BRITISH STEAMSHIP DAGO, APPELLEE.
No. 67.

[Argued February 15, 1894. Decided May 22, 1894.]

Appeal from the district court of the United States for the district of Maryland.

Before Goff and Simonton, circuit judges, and Jackson, district judge.

Argued by John T. Ensor, attorney for appellant, and J. Wilson Leakin, attorney for appellee.

Goff, circuit judge.

This is an appeal from a decree rendered by the district court of the United States for the district of Maryland, dismissing a libel filed on behalf of the United States against the steamship *Dago*. It was charged in the libel that the steamship had not complied with the provisions of the act of Congress approved February 15, 1893, entitled "An act granting additional quarantine powers and imposing additional duties on the Marine-Hospital Service" (27 Stat. L., 448). It was alleged that the *Dago* cleared from a certain foreign port, the port of Bristol, England, for the port of Baltimore, in the United States, on the 10th day of July, 1893, without having obtained a bill of health, as was required by section 2 of said act of Congress, and also that, having cleared and sailed from said port of Bristol at the time mentioned, she did, on the 2d day of August, 1893, unlawfully enter the port of Baltimore, in the United States, without having obtained a bill of health, as was required by the said act of Congress.

The libel, which was filed August 5, 1893, sets forth that the *Dago* was seized by the collector of customs at the port of Baltimore as forfeited to the United States, to be released upon the payment of not more than $5,000, the exact amount to be determined by the court. The answer of the steamship, filed September 22, 1893, claimed that she came to the port of Baltimore provided with a bill of health in all respects in accord with the requirements of the law, obtained at Newport, in Wales, her last port of departure from Great Britain, and she insisted that no other bill of health was required of her by the law.

The said act of Congress, or the parts thereof necessary to consider in connection with this case, reads as follows: "That it shall be unlawful for any merchant ship or other vessel from any foreign port or place to enter any port of the United States except in accordance with the provisions of this act, and with such rules and regulations of State and municipal health authorities as may be made in pursuance of, or consistent with, this act; and any such vessel which shall enter, or attempt to enter, a port of the United States in violation thereof, shall forfeit to the United States a sum, to be awarded in the discretion of the court, not exceeding five thousand dollars, which shall be a lien upon said vessel, to be recovered by proceedings in the proper district court of the United States. In all such proceedings the United States district attorney for such district shall appear on behalf of the United States, and all such proceedings shall be conducted in accordance with the rules and laws governing cases of seizure of vessels for violation of the revenue laws of the United States.

"SEC. 2. That any vessel at any foreign port, clearing for any port or place in the United States, shall be required to obtain from the consul, vice-consul, or other consular officer of the United States at the port of departure, or from the medical officer where such officer has been detailed by the President for that purpose, a bill of health, in duplicate, in the form prescribed by the Secretary of the Treasury, setting forth the sanitary history and condition of said vessel, and that it has in all respects complied with the rules and regulations in such cases prescribed for securing the best sanitary condition of the said vessel, its cargo, passengers, and crew; and said consular or medical officer is required, before granting such duplicate bill of health, to be satisfied that the matters and things therein stated are true; and for his services in that behalf he shall be entitled to demand and receive such fees as shall by lawful regulation be allowed, to be accounted for as is required in other cases.

"The President, in his discretion, is authorized to detail any medical officer of the Government to serve in the office of the consul, at any foreign port, for the purpose of furnishing information and making the inspection and giving the bills of health hereinbefore mentioned. Any vessel clearing and sailing from any such port without such bill of health, and entering any port of the United States, shall forfeit to the United States not more than five thousand dollars, the amount to be determined by the court, which shall be a lien on the same, to be recovered by proceedings in the proper district court of the United States.

"Sec. 3. That the Supervising Surgeon-General of the Marine-Hospital Service shall, immediately after this act takes effect, examine the quarantine regulations of all State and municipal boards of health, and shall, under the direction of the Secretary of the Treasury, cooperate with and aid State and municipal boards of health in the execution and enforcement of the rules and regulations of such boards and in the execution and enforcement of the rules and regulations made by the Secretary of the Treasury to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, and into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia. * * * The Secretary of the Treasury shall make such rules and regulations as are necessary to be observed by vessels at the port of departure and on the voyage, where such vessels sail from any foreign port or place to any port or place in the United States, to secure the best sanitary condition of such vessel, her cargo, passengers, and crew; which shall be published and communicated to and enforced by the consular officers of the United States. None of the penalties herein imposed shall attach to any vessel or owner or officer thereof until a copy of this act, with the rules and regulations made in pursuance thereof, has been posted up in the office of the consul or other consular officer of the United States for ten days in the port from which said vessel sailed; and the certificate of such consul or consular officer over his official signature shall be competent evidence of such posting in any court of the United States."

The only question in the case is, we think, whether or not the steamship *Dago* was required to obtain a bill of health at Bristol, England, at the time she cleared and departed therefrom for Baltimore, in the United States, by way of Newport, Wales. It was contended by the respondent below, that as she stopped on her way at Newport it was only necessary to obtain a bill of health at that place. It was clearly shown by the testimony, in fact it was admitted, that the *Dago* cleared from Bristol, England, via Newport, Wales, for Baltimore, in the United States, and that she was provided with a bill of health from the port of Newport, Wales, but that she did not obtain a bill of health at the port of Bristol at the time of departing therefrom, and also that she was not provided with one at the time she entered the port of Baltimore.

The district court, holding that the *Dago* was not guilty of a breach of said act of Congress, dismissed the libel. The United States petitioned for and was allowed an appeal.

The act mentioned was passed to prevent, if possible, the introduction into the United States of contagious and infectious diseases from any foreign port. It makes it unlawful for any vessel from any foreign port to enter any port of the United States except in the manner provided for by said legislation and the rules and regulations established under its provisions; and it requires any vessel at any foreign port clearing for any port in the United States to obtain a bill of health at the port from which it so clears and departs.

The regulations promulgated by the Secretary of the Treasury, dated February 24, 1893, in pursuance of said act of Congress, are in part as follows:

Article 1. Masters of vessels about to depart from any foreign port for a port in the United States must procure from the United States consular or medical officer at such port of departure a bill of health.

The act of Congress and the rules and regulations authorized by it were duly posted in the office of the consul at Bristol, England, in the manner required by law. The master of the *Dago* was aware that a bill of health was required and procured it at Newport, in Wales.

To hold that this action on his part was a compliance with the terms of the law and regulations in such cases made and provided would permit a vessel to clear from an infected foreign port, at which it could not properly obtain such bill of health, and by stopping on the way at another port not infected secure the bill of health that would enable it to enter the ports of the United States, thereby defeating the object had in view when said act of Congress was enacted. It is intended by said legislation to furnish the health and quarantine authorities of this country with information relative to the sanitary condition of the ports of departure of vessels desiring to enter the ports of the United States. It is made the duty of the Secretary of the Treasury and of the Supervising Surgeon-General of the Marine-Hospital Service to cooperate with and aid State and municipal boards of health in the execution and enforcement of the rules and regulations made by the Secretary of the Treasury to prevent the introduction of contagious or infectious diseases into the United States from foreign countries. And the Secretary of the Treasury is required to make such rules and regulations as are necessary to be observed by vessels at the port of departure and on the voyage, where such vessels sail from any foreign port or place to any port or place in the United States, to secure the best sanitary condition of such vessel, her cargo, passengers, and crew, which shall be published and communicated to and enforced by the consular officers of the United States. By the regulations so authorized and promulgated the United States consul at the port of departure is required to certify that the vessel has complied with the rules made under the act now in question and that the vessel leaves his port bound for a particular port in the United States. If the vessel so bound for the United States stops at other foreign ports the consul of the United States at which such calls are made must give a similar certificate or consular visé of the bill of health as to the passengers, their effects, and the cargo taken on the vessel at such ports, and also as to the condition of the vessel, passengers, and crew since it left the port of departure.

The protection intended by the legislation is of great and universal importance, and the provisions of the rules and regulations are not severe, nor are they burdensome, but are made with due regard to the interests of all concerned, and are necessary both to the comfort of the individual citizen and the safety of the general public.

We do not think the *Dago* complied with the requirements of said act of Congress when she procured the bill of health at Newport, Wales. She should have secured it at Bristol, England, her port of departure. She violated the law and ignored the rules and regulations provided for by it. It follows that the decree of the district court for the district of Maryland must be reversed and the cause remanded to said court for such further proceedings as may be proper, and it is so ordered.

DEPARTMENT OF JUSTICE,
Washington, D. C., June 6, 1894.

SIR: I have the honor to advise you that the circuit court of appeals for the fourth circuit has handed down an opinion in the case of the United States *v.* The British steamship *Dago*, in which it holds that the *Dago* violated the act of Congress approved February 15, 1893, entitled "An act granting additional quarantine powers and imposing additional duties on the Marine-Hospital Service.

Respectfully, RICHARD OLNEY, *Attorney-General.*

The SECRETARY OF THE TREASURY.

ENFORCEMENT OF THE QUARANTINE REGULATIONS FOR DOMESTIC PORTS.

For the purpose of enforcing the quarantine regulations at domestic ports, Marine-Hospital officers were detailed to inspect the same, the character of the inspection being shown by the following instructions:

INSTRUCTIONS TO MEDICAL OFFICERS OF THE MARINE-HOSPITAL SERVICE DETAILED TO MAKE INSPECTIONS OF STATE AND LOCAL QUARANTINES.

TREASURY REGULATION.

* * * * * * *

In the performance of the duties imposed upon him by the act of February 15, 1893, the Supervising Surgeon-General of the Marine-Hospital Service shall, from time to time, personally or through a duly detailed officer of the Marine-Hospital Service, inspect the maritime quarantines of the United States, State and local, as well as national, for the purpose of ascertaining whether the quarantine regulations prescribed by the Secretary of the Treasury have been or are being complied with. The Supervising Surgeon-General, or the officer detailed by him as inspector, shall, at his discretion, visit any incoming vessel, or any vessel detained in quarantine, and all portions of the quarantine establishment for the above-named purpose and with a view to certifying, if need be, that the regulations have been or are being enforced.

J. G. CARLISLE, *Secretary.*

GENERAL INSTRUCTIONS.

A. Your inspections will include all ports within your district where vessels are allowed to enter and discharge cargo, and ports which may be used as ports of call.

B. A separate report will be made of each station visited.

C. Visit every part of the quarantine establishment, and take necessary precautions to prevent the conveyance of contagious or infectious diseases through the medium of your own person.

D. Visit the custom-house for the purpose of ascertaining whether the regulations with regard to bills of health and quarantine certificates are being observed; also the immigration station for any pertinent information.

E. Reports of a statistical character and descriptive of the quarantine called for herein need be made but once in every six months, namely, on the date nearest the 1st of January and the date nearest the 1st of July; but any changes that have been made since the last general report should be immediately recorded.

In making your report you will follow the special instructions in their order, referring to each by number.

SPECIAL INSTRUCTIONS.

1. Describe the quarantine station, location, buildings, anchorages, etc. Give limits of anchorage for noninfected and for infected vessels; facilities for inspection of vessels; apparatus for disinfection of vessels and of baggage; facilities for removal and treatment of the sick, and for the removal and detention of suspects; mail and telegraph facilities, etc.

2. Give personnel of the station or port; name of the quarantine officer or officers; post-office address; total number of officers and subordinates, etc.

3. Transmit copies of the laws under which the local quarantine is maintained and copies of the quarantine regulations, and describe the quarantine customs of the port as they are carried out.

NOTE.—There are sometimes slight, but possibly important, variations from the letter of the local regulations in the administration of quarantine. Also local regulations generally allow a wide latitude to the quarantine officer, and how this latitude is used, i. e., how the quarantine officer interprets the spirit of the regulations, is very important.

4. State what quarantine procedures, either under printed regulations or by custom, are enforced at the port, in addition to the requirements of the Treasury Department.

It should also be stated whether there is undue or unnecessary detention or disinfection of vessels.

5. State whether the inspection is maintained throughout the year or for what period, and what treatment of vessels is enforced during the entire year.

NOTE.—Many ports on the South Atlantic coast (e. g., Charleston, Savannah, and Fernandina) require certain ballasts to be discharged in quarantine without regard to season.

6. Are vessels from other United States ports inspected?

7. Describe quarantine procedures in the inspection of vessels, and, if infected, the treatment. Give time in quarantine (*a*) between arrival and commencement of disinfection, (*b*) time occupied by disinfection, and (*c*) time after completion of disinfection of vessels until discharge.

NOTE.—Quick or slow handling of a vessel is of more importance commercially than the question of fees. The time lost is the vessel's heaviest expense generally.

8. What communication is held with vessels in quarantine (and before quarantine by pilots, etc.) and how regulated? Is there any intercommunication allowed among vessels in quarantine?

9. State what will be done with a vessel infected with cholera; second, a vessel infected with yellow fever; third, a vessel infected with smallpox (said vessels carrying or not carrying immigrants), and what conditions are regarded as giving evidence of the vessel's infection in each case.

10. State whether records are kept at the station of the cases of disease that have occurred during the voyage, on arrival, and during detention.

11. Transmit schedule of quarantine fees, and give other fees and expenses necessarily and usually attendant on quarantine, as tonnage, ballast, wharfage charges, etc.

12. Make a statement showing the number of vessels arriving at the port during the preceding calendar year, by months—(*a*) from foreign ports; (*b*) from foreign ports in yellow-fever latitudes via domestic ports; (*c*) from domestic ports. Show also the character of the commerce carried on by the port, i. e., from what countries chiefly the vessels come, and whether in cargo, ballast, or empty.

13. State results of your visit to (*a*) the custom-house; (*b*) the immigration bureau.

14. State whether in your opinion the quarantine facilities are sufficient to care for the shipping entering the port.

15. Name the quarantine regulations of the Treasury Department which are not properly enforced, and state specifically whether the regulations regarding inspection and disinfection, and particularly the period of observation after disinfection, of vessels are observed.

16. Mention any facts which in your opinion should be known to the Department, bearing directly or indirectly upon the quarantine service, and make such recommendations as seem proper.

WALTER WYMAN,
Supervising Surgeon-General Marine-Hospital Service.

NOTE.—Report to be written on legal-cap paper (on one side only), signed, and inclosed in this blank as a cover.

In accordance with the above instructions reports were received from time to time from every port of entry and quarantine station of the United States, and, upon inefficiency being shown, the attention of the proper State or local quarantine authority was called thereto, and satisfactory responses received or action was taken by the Bureau to remedy defects. At a great number of the smaller ports it was found that no facilities existed for the disinfection of infected vessels, and the collector of customs was thereupon given specific orders as to the disposition to be made of any infected vessel which might arrive.

The following letter, addressed to the collector of customs at Beaufort, S. C., is similar to a large number of letters addressed to collectors at other ports:

DISPOSITION TO BE MADE OF INFECTED VESSELS ARRIVING AT PORTS WHERE THERE ARE NO APPLIANCES FOR PROPER DISINFECTION.

TREASURY DEPARTMENT,
Washington, June 29, 1894.

SIR: I would respectfully inform you that the local quarantine at Beaufort, S. C., has been inspected by Dr. J. H. White, passed assistant surgeon, Marine-Hospital Service, and report of said inspection made to the Supervising Surgeon-General of the Marine-Hospital Service, to the effect that there are no facilities for the disinfection of infected vessels which might arrive at Beaufort, required under the quarantine regulations of the United States approved April 26, 1894.

You are informed that infected vessels arriving at Beaufort, requiring disinfection under the quarantine regulations of the United States will be remanded to some other port for disinfection, in accordance with section 6 of the act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service, approved February 15, 1893.

You will report by telegraph to the Supervising Surgeon-General of the Marine-Hospital Service the arrival of any infected vessel within your collection district.

Your attention is also called to that part of section 5 of the national quarantine act, above referred to, regarding the health certificate to be furnished by the health officer, and to article 1 (inspection), quarantine regulations, to be observed at ports and on the frontiers of the United States, dated April 26, 1894.

Respectfully, yours,

S. WIKE, *Acting Secretary.*

To the COLLECTOR OF CUSTOMS, *Beaufort, S. C.*

CONTROVERSY WITH THE LOUISIANA BOARD OF HEALTH.

In the course of the inspection of the local quarantines within his inspection district, Surg. J. M. Gassaway reported, under date of June 19, 1894, that the quarantine officer for the port of New Orleans was not giving the form of certificate of discharge from quarantine which is required by the law of February 15, 1893, and the regulations of the Treasury Department made thereunder. In accordance with this report, a letter was addressed to the quarantine officer for the port of New Orleans calling his attention to the fact that the proper quarantine certificate was not being issued, and requesting a compliance with the regulation. He replied, stating the matter had been referred to the State board of health.

In the meantime the following letter was addressed to the collector of customs:

TREASURY DEPARTMENT,
Washington, July 11, 1894.

SIR: I have to inform you that the Louisiana State quarantine, located near the mouth of the Mississippi River, has been inspected by Surg. James M. Gassaway, Marine-Hospital Service, and report of said inspection received by the Supervising Surgeon-General, which shows that a part of section 5 of the act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service, approved February 15, 1893, and the quarantine regulations made thereunder (Art. X, par. 4), regarding the certificate to be furnished by the health officer at the quarantine station that the rules and regulations made by the Secretary of the Treasury have been complied with, are not being observed at the port of New Orleans.

You are informed that 500 blank certificates have this day been sent to Dr. Wilkinson, quarantine officer at Louisiana quarantine, with the request that this certificate be used in furnishing free pratique to vessels which require inspection under the quarantine regulations of the United States.

Respectfully, yours,

W. E. CURTIS, *Assistant Secretary.*

COLLECTOR OF CUSTOMS, *New Orleans, La.*

In the correspondence that ensued it was developed that the local quarantine officer was furnishing a certificate that the State board of health regulations had been complied with. Furthermore, that the State board of health regulations with regard to the detention of persons arriving on yellow-fever infected vessels was but three days, while the national regulations required five. A committee of the State board of health, including its attorney, appeared in Washington, with a view to a harmonious discussion of the matter and the arrival at some agreement. The agreement finally arrived at was to the effect that the quarantine certificate must show that the quarantine regulations of the Treasury Department had been complied with. It was urged, however, by this committee that the five days' detention required by the United States Quarantine Regulations was unnecessary at the port of New Orleans, and that the rule discriminated in favor of New York, for example, as against New Orleans. The following memorandum was submitted by myself:

MEMORANDUM.

The contention of the Louisiana board of health has been—

First. That fruit vessels would be detained under the Treasury Regulations. They have been shown that they misread the Regulations. There is no detention of their fruit vessels.

Second. That five days' detention is a new order sprung upon them. The order was issued in the Regulations of April 26. An inspection of their quarantine practice showed that the collector was receiving only a permit authorizing the vessel to come to the city—no certificate that the master had complied with the Regulations, which certificate is required by the law.

Third. That the five days' detention is unnecessary. This matter was carefully considered and thoroughly canvassed by the board appointed to frame the Regulations. The five days' detention is not imposed on the vessel, but on its personnel, and only when from a yellow-fever infected port or when the vessel has had yellow fever on board.

The number of said ports is relatively few. The Louisiana board requires three days' detention, and the additional two days is regarded as the minimum for safety.

Prior to issuing the Regulations every quarantine station on the Gulf Coast and on the Atlantic Coast as far north as Norfolk, Va., required five days' detention (and in some cases more than five), excepting recently New Orleans.

The period of incubation of yellow fever is frequently more than three days.

To obviate this five days' detention and permit passenger traffic between a Southern port and a yellow-fever infected port special provisions are made, which are complied with by the line of steamers plying between Havana and Florida ports. New Orleans may take advantage of the same provisions.

Fourth. That the rule is illegal which provides additional precautions for ports south of the southern boundary of Maryland, on the ground that the law states that the Regulations shall operate uniformly and must not discriminate against any port or place.

This contention would demand that exactly the same regulation should be made with regard to a vessel from a yellow-fever port arriving at Portland, Me., where the danger is nil, at a time when frost or ice prevails, and for a vessel arriving at New Orleans where the danger is great even while frost or ice is prevailing at Portland.

The "southern boundary of Maryland" line was adopted without protest by the conference of quarantine officers called to consider the first regulations issued.

The same principle prevailed all last year without protest.

As a result of the appeal of the Louisiana board of health, the amendment previously recorded in circular of August 16, 1894, was ordered to be made, which still provides for five days' detention of persons unless the vessel and its contents have been disinfected by a special acclimatized crew; the same being the Treasury Regulation which was in force before the revision, namely, in the Quarantine Regulations of 1893.

In closing this chapter on the Quarantine Laws and Regulations, I have to invite your attention to the necessity of Congress making some provision for carrying into effect section 8 of the act of February 15, 1893, which is as follows:

> Sec. 8. That whenever the proper authorities of a State shall surrender to the United States the use of the buildings and disinfecting apparatus at a State quarantine station, the Secretary of the Treasury shall be authorized to receive them, and to pay a reasonable compensation to the State for their use, if in his opinion they are necessary to the United States.

Since the passage of this act two States, Pennsylvania and North Carolina, have practically surrendered their quarantine functions, and an important seaport of another State, Brunswick, Ga., has, under authority conferred by law, been deprived of its quarantine functions because of inefficiency.

The maintenance of these quarantine stations has been provided for in the appropriations for the present fiscal year, but other States and other local authorities are contemplating the surrender of their quarantine functions, and it is desirable that a definite policy regarding the stations so surrendered should be adopted and provision made for their equipment and maintenance through a general fund to be established for that purpose by fees collected from vessels or by direct appropriation, as may be determined by Congress.

A CONSIDERATION OF CERTAIN DISEASES, THEIR NATURE AND PREVALENCE, AND SPECIAL PRECAUTIONS TAKEN WITH REGARD TO SAME.

I have the honor to submit the following concerning the prevalence of the several diseases named and the action of the Marine-Hospital Bureau or its representatives relative thereto:

CHOLERA.

History of Cholera in Europe in 1894.

The close of the year 1893 found cholera still present in Europe. In St. Petersburg the epidemic showed no sign of abatement, and in Austria, France, Holland, and Belgium choleraic cases and deaths continued to be reported. Choleraic infection had spread to the Canary and Cape de Verde Islands and threatened a reinfection of the western European seaports. Cholera persisted in Constantinople, and other localities of the Turkish Empire continued to report choleraic cases and deaths. The existence of active cholera foci in the most populous parts of Europe seemed to threaten a serious and general outbreak.

In January, 1894, cholera was reported from the Russian governments of Volhynia, Kovno, Kursk, Tambov, Tschernigov, Warsaw, Plock, and Radom and the Caucasian governments of Stavropol and Erivan. In Germany the epidemic seemed extinct. In France cholera had persisted in the northwestern seaboard provinces since 1892, and in January, 1894, it was still present. In Belgium a somewhat severe outbreak occurred at Namur, which was attributed to contamination of the river Sambre from a choleraic outbreak of the preceding year at Charleroi. In Austria-Hungary cholera was officially declared extinct. In Constantinople choleraic cases and deaths were reported, but in inconsiderable numbers.

The epidemic at Teneriffe, Canary Islands, was declared extinct. In India a sudden and severe outbreak, but on a limited scale, occurred at Nowapota, on the Eastern Bengal Railway.

In February cholera was officially declared present in Tripoli. At St. Petersburg the epidemic had completely disappeared. In France cholera was still present in the Department of Finisterre.

In March a recrudescence of cholera occurred in Constantinople. No official report was made of cholera from other localities in Europe.

In April cholera was still present in Constantinople and its vicinity; in France in Finisterre and Brittany; and in Russia in the provinces of Orel, Saratoff, Ufa, Elisavetpol, and the Don province, and in Russian Poland. In Austria-Hungary an outbreak was reported in Galicia. In Portugal an outbreak of choleraic disease occurred at Lisbon. The infection was undoubtedly conveyed from the Portuguese colony of St. Vincent, Cape de Verde Islands, where a serious epidemic of cholerine had prevailed throughout the colony during the entire summer of 1893. In the spring of 1894 this epidemic became true Asiatic cholera of the most pronounced type. No precautions against importation were taken by the Portuguese Government, vessels from the Cape de Verde Islands being allowed harbor at Lisbon. On one of these, the *St. Tome,* cholera cases had occurred, and the disease naturally took hold in Lisbon. It was fortunately mild in type, and though 1,000 cases occurred there were only six choleraic deaths.

In May cholera was reported present in the Russian governments of Podolia, Bessarabia, Kieff, and Tschernig. At Constantinople the epidemic was reported extinct. At Waldeck, a village in east Prussia, a case of cholera was observed, and in Austria-Hungary cholera was reported present in Galicia.

In June cholera was present at Sivas, Turkey in Asia, and spreading to neighboring localities. The sanitary situation of the Hedjaz was favorable. Three fresh cases were observed at the Prussian town of Myslowitz, in Upper Silesia, near the Russian border. Cholera was present throughout Russian Poland. The epidemic was reported extinct in Constantinople. In Italy one case was reported at Leghorn. On June 6 four cases of cholera were reported in Paris. That these were true cholera was shown by bacteriological test. The direct source of infection in these cases is undetermined. On June 16 cholera was reported present in Belgium, at Liège, and other localities, and to be spreading rapidly. Cholera was also reported present at Mecca, in Arabia.

By July 14 the epidemic manifestations of cholera had become more pronounced, especially in Russia, the disease being reported present in Warsaw, Grodno, Kielce, Radom, Plock, and Tula, and in St. Petersburg and Cronstadt. The presence of comma bacillus was demonstrated in seventeen of the nineteen cases that occurred in Cronstadt. The outbreak in St. Petersburg was more severe than in previous years, the conditions for the spread of the disease being intensified by the great heat of the summer. Cholera even penetrated into Finland. In Austria-Hungary the provinces of Galicia and Bukowina were reported infected. Cholera cases occurred at the quarantine station on the island of Fejan, near Stockholm, Sweden, on a vessel from St. Petersburg. Choleraic cases and deaths were reported from Liège, Belgium, and two cases from Holland. In the German Empire cholera cases and deaths were reported along the course of the Vistula. At Lubeck two deaths were reported on the steamships *Helix* and *Trave* from St. Petersburg. Cholera was also reported present in Hiogo, Japan. From Canton, China, 40,000 deaths from cholera were reported.

In August cholera continued present with marked severity in St. Petersburg and in other governments of Russia. Cases and deaths in considerable numbers continued to be reported from Austria-Hungary in Galicia and Bukowina. Cases and deaths were also reported from Amsterdam and Rotterdam, in Holland. In the epidemics of 1893 and 1894 the line of the spread of infection in Holland has been found to follow the course of inland water travel by river and canal boats. On August 7 the steamship *Balmore*, from St. Petersburg for London, arrived off Gravesend and reported the death from cholera of one of her crew. Other cases occurred on board while the vessel lay in the Thames. Bacteriological test proved the cases to be true cholera. In Italy one case was reported at Procida. In Belgium an extension of the epidemic to many towns on the Meuse and Sambre was observed. In France the disease was termed cholerine. It continued to be reported at Paris, Marseilles, Bordeaux, Sorry, Monuel-sur-Seille, Avignon, Rheims, and Reuil.

In September cholera was present in the German Empire in the districts of the Vistula, Netze-Wartha, and the Rhine, and in Austria in Galicia and Bukowina; in France at Bordeaux and Cognac, and Belgium. In the Netherlands cholera was reported in ten localities, and in Russia in twenty-four governments and two cities. In Constantinople cholera was reported to be dying out, but in ten vilayets of the Turkish Empire cholera was reported present. Cholera was also observed at Rangoon, in Burmah.

In October cholera was still present in the German Empire, in the Vistula, Netze-Wartha districts, and the Rhine province, in Galicia, and Bukowina, in Russia, Belgium, the Netherlands, and in France at Cognac and Nantes.

In November the status of the epidemic was much the same as in October. Cases and deaths continued to be reported from the countries, districts, and localities previously reported infected. The conditions existing at the close of the active epidemic of 1894 indicate the dying down rather than the extinction of cholera, and suggest the question to what extent and under what local conditions may cholera acquire endemicity in temperate climates.

The history of choleraic epidemics in Europe previous to 1892 presents the same sequence of moderate attack in the autumn, complete cessation during the winter, violent outbreak during the following summer, and then extinction.

The recent epidemics have not followed this sequence. The persistence of cholera in Europe during the past three years suggests a parallel between the manifestations of cholera in Europe and the phenomena observed with regard to this disease in the endemic area of cholera in India. In the lower valley of the Ganges cholera is always present, yet on careful examination it will be found that it is not continually present in any one locality, but is a veritable nomad, wandering about from place to place and breaking out in the form of fierce epidemics in localities where certain conditions of moisture, temperature, and impure water supply provide it with a suitable medium. Even within this endemic area it has, according to foreign writers, a tendency to die out locally, and after a violent outbreak it will withdraw from an infected locality and remain absent for a length of time. There appears to be a range of temperature and soil moisture within which cholera is prone to flourish, while an elevation or decline of either factor above or below this range appears to tend to its suppression. The coexistence or separation of these two conditions appears to account for the seasonal rhythm of cholera within its endemic area. Even in the few localities where cholera persists throughout the year two periods of aggravation and two of mitigation are observed. If cholera in India can be proved to be due not to an ineradicable germ, constantly present, but to repeated sowings of that germ in fresh and suitable soil, the same is probably true of the manifestations of the disease in Europe.

During the past few years it has become evident that there are large areas of country in Europe, notably in Russia, in which cholera tends to recur again and again and to become endemic in much the same way in which it is endemic in India, not fixed, but wandering about within an endemic area. This migratory character of European cholera is found to develop coincidentally with the large increase in the facilities for travel. The field for the successful resistance of cholera is clearly indicated. The efficacy of sanitary measures to prevent the formation of a choleraic focus and a consequent epidemic outbreak was demonstrated at Hurdwar, in India, in 1891, at the time of the kumbh, or great fair. The town of Hurdwar is not situated within the endemic area of cholera, but on the Upper Ganges, where the river issues, cool and clear, from the mountains, and it possesses a peculiar fascination for the dwellers in the hot, vaporous plains. The annual fair is always largely attended by pilgrims from all parts of India, and it frequently happens that the dispersion of this vast concourse is followed by a wide diffusion of cholera. In 1891 the great fair, which is held every twelve years and is considered an occasion of especial sanctity, drew to Hurdwar, which numbers only 29,000 inhabitants, a concourse of nearly 1,000,000 pilgrims; yet this vast assemblage met and dispersed without creating or spreading an epidemic of cholera. According to Dr. Ernest Hart, this immunity was due to the system of sanitary measures instituted and carried out by the sanitary commission of the northwestern provinces of India. As the result of these measures hygienic conditions were created and maintained in the presence of the most actively provoking sources of infection, and the crowd of pilgrims dispersed throughout the country without carrying an epidemic of cholera into the regions through which they passed.

A practical test of the responsibility of the Mecca pilgrimage in the generation of a general cholera epidemic has been suggested by Dr. Tholozan, physician to the Shah of Persia. It is to suspend for one year the great Mohammedan pilgrimage. This might be done if the great spiritual chiefs of Islam would use their great influence in favor of the plan. The objection to this proposition is that the laws of Mohammed require every Mohammedan to make the pilgrimage to Mecca once in his life, and that the suspension of the pilgrimage for one year would deprive some persons of the opportunity to perform this sacred duty. Dr. Tholozan recalls the fact that the epidemic in Europe of 1852 came from the borders of Poland and Germany and that of 1869 from the Ukraine, and he claims that the pilgrimage to the Hedjaz is not the invariable starting point of choleraic infection.

CHOLERA AS REPORTED TO MARINE-HOSPITAL BUREAU FROM MAY 15, 1894, TO NOVEMBER 30, 1894.

	Cases.	Deaths.		Cases.	Deaths.
Austria-Hungary:			Holland	532	265
Bukowina	863	490	India	......	775
Galicia	14,408	7,905	Italy	2	1
Belgium	2,694	1,266	Japan	6	3
China (Canton)	....	*40,000	Russia	62,661	28,589
England	....	1	Spain	1	1
France	....	170	Sweden	29	5
Germany	988	321	Turkey	10 565	4,692

* Lancet, July 21, 1894.

THE RELATION OF INFECTED WATER SUPPLY TO THE SPREAD OF CHOLERA.

The frequent spread of cholera through infected water supply has been thoroughly demonstrated, but by no one with greater clearness than by Dr. Ernest Hart, editor of the British Medical Journal. The subject is of such importance as to warrant the insertion of the following abstract of an address delivered by him before the American Medical Association:

"I think it is high time to put old notions aside, and that the spread of cholera should be looked at practically in the light of the accumulated evidence afforded by all the great epidemics of the past. That evidence clearly shows that cholera is a filth disease, carried by dirty people and spread by dirt and the use of dirty water. With pure water, pure air, pure soil, and pure habits, cholera need not be feared. I have been convinced that specifically polluted water is not merely an occasional or adjuvant cause, but the causa causans of almost every great epidemic of Asiatic cholera, and I have observed that when the use of the infected water has been abandoned or cut off the epidemic has ceased. These views have been fully borne out by a close observation of each successive cholera outbreak within the last thirty years.

"*English experiences, epidemic of 1831–1833.*—The general circumstances of the water supplies of England at that time were deplorably bad, and Dr. Snow, a few years later, collected information which led to the presumption that, as in subsequent epidemics, contaminated water in 1832 played an important part. Dr. Snow held that the cholera in 1848 was brought to London from Hamburg; that the infected sewage matter found its way partly through the soil into the wells and partly through sewers into the Thames and Lee, from which a portion of the water supply of London was derived. In the epidemic of 1853–54 Dr. Snow was called in to examine the water supply. His published report shows the clearly marked incidence of the disease on those who drank the water of the parish pump. It shows how the workers in one particular factory, where the water was always used, suffered severely from cholera, whilst those in an adjoining brewery, where the water was never used, escaped. In the epidemic of 1866, after investigation, the result showed that, owing to changes having been made in their filtering apparatus, the company had sent out for a few days unfiltered water, or water in a very partially filtered state, direct from the River Lee, which had just at that moment become infected with choleraic discharges.

"*Egyptian experiences.*—Since 1831 Egypt has been severely scourged by cholera at short intervals. The Nile is the main source of water supply to the whole country, and Dr. Sandwith, Sir W. Guyer Hunter, and others, have fully shown the fearful extent to which that river has been and is habitually polluted with human and other filth.

"*French experiences.*—Marseilles has earned an unenviable notoriety as regards cholera in recent years, and there is much evidence that its public water supply, especially where derived from the sewage-polluted river Huveaune, has been responsible for the epidemics. At Toulon both its sanitary state and its water supply have been by no means satisfactory. The department of Finistere furnishes a very vivid object lesson in the spread of cholera by dirt, sewage-polluted well water, and specifically contaminated public fountains. In November, 1884, there was a sharp outbreak of cholera in the western suburbs of Paris, the mortality rising rapidly and then as rapidly declining, in the manner characteristic of water-borne epidemics, and I had excellent reasons for believing that the epidemic was due to the temporary distribution of highly polluted water to particular districts of the city.

"*Italian experiences.*—The severest outbreak occurred in Naples in August, 1884. At that period the water supply of Naples was mainly derived from trenches running from house to house underground, and was exposed to direct contamination, not only by soakage of filth, but by the reckless practice of washing in the trenches linen soiled with choleraic discharges. In the following year Naples was supplied with pure water, and there followed a marked immunity of the city from cholera, notwithstanding the presence of the disease in the neighborhood. In Palermo, in 1885, the water was obtained from open trenches passing beneath the houses, partly from public fountains and partly from wells exposed to contamination. The early termination of the epidemic was due to the prompt dealing with the dangerous water sources.

"*Spanish experiences.*—In 1885 Spain was the scene of a cholera outbreak of exceptional ferocity. In a work published in 1886 Mr. George Higgin shows that the disease never became truly epidemic or dangerous in any Spanish city in which there was a pure supply of water.

"*Russian experiences.*—The complete history of cholera in Russia in 1892 still remains to be written, but what we know of it bears out previous experiences as to the influence of infected water. At Ashabad, out of the 13,000 inhabitants, 10 per cent died. The cause of this outbreak was traced to a small stream of water which supplied the town, and which it was found had been fouled by filth from a small village on its banks where cholera had broken out four days previously.

"*Cholera at Hamburg in 1892.*—The influence of the public water supply in disseminating the disease may be seen in the incidence of the disease respectively on Hamburg, Altona, and Wandsbeck. Wandsbeck (supplied with spring water), with a population of 20,571, had 64 cases. Altona (water from the Elbe, but passed through a good gravel filter), with a population of 173,279 inhabitants, had 572 cases, and Hamburg (water from the Elbe), with a population of 579,907 inhabitants, had 17,891 cases.

"*Indian experiences.*—In India, as elsewhere, water has been the chief nurse and disseminator of cholera, and I believe that if every town and village in India were provided with pure and properly protected water, the so-called "endemic area" would soon become indefinite. The experiences of Calcutta go to show that those persons who have an abundant and pure water supply, namely, the Europeans and better class of natives, escape cholera epidemics, while the natives, who necessarily depend on tank water, suffer severely when a tank becomes polluted."

CHOLERAIC INOCULATION AS A PREVENTIVE OF CHOLERA.

During the past year (1894) Haffkine has continued his investigations and experiments in choleraic inoculation as a preventive of cholera These experiments have been carried on in India, and since the arrival of Mr. Haffkine in that country a total of over 32,000 inoculations have been performed. Of this number about two-thirds have been reinoculated, bringing the number of performed inoculations up to about 50,000. Of this number of people, but few cases have come under observation as having been exposed to cholera. The following statement and figures, which are Mr. Haffkine's, show the result in those cases:

"In Calcutta inoculations have been carried out from the beginning of March of this year till the present time; 3,478 persons have submitted themselves to inoculation. In 13 houses cholera appeared from two to one hundred and eighty days after the inoculations had been carried out. The total number of the inhabitants of these houses was 181. Out of this number 85 were inoculated, 96 untreated. The number of cases of cholera that occurred among the 85 inoculated is 1, which was followed by a fatal issue, giving a percentage of attacks and deaths of 1.18 per cent. The number of attacks among the 96 noninoculated was 15, and of deaths 11, giving a percentage of cases 15.63 per cent., and of deaths total 11.63 per cent.

"Of soldiers who had been inoculated by Mr. Haffkine in Cawnpore thirteen months previously, 75 were present on the occasion of the epidemic of last August, and were located in barracks with 177 noninoculated. During the epidemic 19 cases of cholera and 13 deaths occurred among the noninoculated. No cases occurred among those who had been treated.

"The number of observations is not sufficient, and the time is not ripe for discussion, nor for any attempt to bring about a general consensus of opinions.

"I will point out, however, one fact, namely, that the harmlessness of the operations, whether in the presence or absence of cholera, is now definitely established. This is proved by the examination of the figures. Summarizing the occurrences among the inoculated and uninoculated, and disregarding the question whether they were accidental or not, we have the following results: Total number of those on whom observations have been made in Calcutta, Gaya, Cawnpore, and Lucknow is 2,235. Of these 500 were inoculated and 1,735 not inoculated.

"Inoculated had 21 attacks and 19 died, giving a percentage of cases to total of 4.2 and deaths to total of 3.8 per cent. Uninoculated had 174 attacks and 113 died, giving a percentage of cases to total of 10.63 per cent and deaths to total of 6.51 per cent.

"These figures not only show that the inoculations are harmless, but show a difference in the occurrences that, if interpreted, can only be interpreted in favor of the inoculation."

At the recent Indian Medical Congress the remarks made by different speakers in connection with Mr. Haffkine's communication to the congress on anticholeraic inoculations were, with one exception, distinguished by hopeful views for the future of this form of preventive inoculation.

NO CHOLERA IN THE UNITED STATES.

Owing, it is believed, in large measure to the quarantine regulations of the Government at foreign ports, as well as at domestic ports, no case of cholera occurred in the United States. A suspicious case, however, occurred in the person of an immigrant after arrival in the United States, as will be seen by the following letter from the secretary of the board of health of Cumberland, Md.:

DEATH OF A GERMAN IMMIGRANT AT CUMBERLAND, MD., WITH SYMPTOMS RESEMBLING THOSE OF CHOLERA.

CUMBERLAND, MD., *September 6, 1894.*

SIR: Peter Walther, the German immigrant who died here last night at 8.15 p. m., was a passenger on steamship *Elbe*, from Bremen, which arrived in New York September 3 He came by way of the Baltimore and Ohio Railroad, and reached here September 5, 9.30 a. m. He says he was sick on vessel, and that the surgeon gave him medicine which relieved him temporarily. He was taken ill early in the morning, September 5, near Cumberland. When I first saw him he was in collapse, and remained in that condition for several hours. He had ten stools before I saw him, and vomited constantly a thin, watery fluid.

After treatment was begun he showed signs of reaction and the pulse returned at the wrist No vomit or stools after this time. He remained in this condition until 7 o'clock p. m., when he grew worse, and died, as stated, about an hour later. Was conscious till the last. I could find no excretions at all in any of the cavities, and there seemed to be a total dryness of the tissues throughout the body. The body was rigid in less than an hour after death. He was thoroughly disinfected, as well as the car in which he was kept, and was buried early this morning several miles from this city. His fellow-passengers are detained in quarantine near Pittsburg, Pa. I regret I am not able to furnish dejecta, but the closet in immigrant station was used, and after I took charge of the case there was no stool. Any other information I can furnish will be done willingly.

Respectfully,
E. T. DUKE, M. D.,
Secretary Board of Health.

SURGEON-GENERAL MARINE-HOSPITAL SERVICE.

A medical officer of the Marine-Hospital Service was immediately dispatched to Cumberland, Md., to make a bacteriological examination, and reported as follows:

WASHINGTON, D. C., *September 13, 1894.*

SIR: In accordance with your instructions of the 7th instant, I have to report that I arrived at Cumberland on the morning of the 8th, and, accompanied by Health Officer E. T. Duke, had the body of the patient, Walther, who was reported to have died of cholera, exhumed, and obtained a portion of the contents of the intestinal tract. I have further to report, as a result of a bacteriological examination, the entire absence of the spirilla of Asiatic cholera.

Respectfully,
H. D. GEDDINGS,
Passed Assistant Surgeon, Marine-Hospital Service.

SURGEON-GENERAL MARINE HOSPITAL SERVICE.

On the receipt of the above information word was telegraphed to the health officer at Pittsburg, who had been detaining a number of immigrants in that city, companions of the deceased patient, and the surveillance of these immigrants ceased.

THE INTERNATIONAL SANITARY CONFERENCE AT PARIS.

Though the Sanitary Conference of Paris, February 7 to April 3, 1894, was called primarily for the prevention of the spread of cholera from Asiatic to European countries, the United States was directly interested, and it is pertinent here to give a summary of the proceedings of this conference. While the conclusions arrived at and the recommendations made are of decided value, at the present writing no information has been received that the measures urged have been put into practical effect.

Abstract of proceedings of the Second International Sanitary Conference, held at Paris February 7 to April 3, 1894.

The following abstract has been prepared in the Bureau from the official report of the conference. The delegates to this conference on behalf of the United States were, as stated on page 57, No. 5, Volume IX, Abstract of Sanitary Reports, Dr. Stephen Smith, of New York; Dr. E. O. Shakespeare, of Philadelphia, and Surg. Preston H. Bailhache, United States Marine-Hospital Service.

The Second International Conference of Paris was called to complete the work of the preceding conference of Venice and Dresden. The countries officially represented were Austria-Hungary, Belgium France, Germany, Great Britain, Greece, Italy, Netherlands, Portugal, Russia, Spain, Sweden and Norway, Persia, Turkey, and the United States. The conference began its sessions February 7, 1894, under the presidency of M. Casimir-Perier.

The subjects proposed for consideration were:

I. Prophylaxis of the pilgrimage to Mecca.

II. Protection of the Persian Gulf ports.

The programme of discussion was formulated as follows:

I.—Prophylaxis of the pilgrimage to Mecca.

(*A*) Sanitary police in Indian ports.

1. Medical inspection of pilgrims.
2. Disinfection.
3. Refusal of embarkation to infected or suspected persons.
4. Refusal of embarkation to all pilgrims who shall fail to show that they possess means to defray the expense of the pilgrimage; five days' observation of other pilgrims.
5. Sanitary passport.
6. Disinfecting apparatus on each vessel.
7. Adequate supply of potable water protected from infection.

(*B*) Sanitary surveillance of pilgrims at the entrance of the Red Sea.

1. Choice of site for quarantine station.
2. If Camaran be chosen, improvements to be instituted.
3. Disinfecting apparatus.
4. Formation of board of management to be under the control of the sanitary council of Constantinople.

(*C*) Improvements to be instituted at Abou Saad and Vasta.

(*D*) Supervision of land caravans of pilgrims to Mecca.

(*E*) Reorganization of the sanitary station of El Tor.

II.—Protection of the Persian Gulf ports.

(*A*) Establishment of sanitary posts at Fao, Bender Abbas, Koveit, Bender-Bushir, Bassorah, Mohammerah.

(*B*) Sanitary surveillance at Menama, in the Bahrem group of islands.

(*C*) Sanitary supervision at Mascate and Guadar, in Beloochistan.

(*D*) Constitution of a sanitary authority to have charge of carrying out quarantine measures.

For the facilitation of business the conference was divided into three committees, as follows: Red Sea commission, Persian Gulf commission, and committee of ways and means.

Before stating the results of the conference of Paris, it may be well to summarize the results of the conferences immediately preceding.

The first step toward international action in regard to public sanitation and maritime quarantine was taken by the French Government in 1847, in appointing medical sanitary agents in the East. The posts of observation thus created were at Constantinople, Smyrna, Beirut, Alexandria, Cairo, and Damascus. The information in regard to sanitary conditions in the East derived from these sources formed the basis for the conference of Paris, which was convened on invitation from the French Government in 1851. Twelve Powers were represented by delegates at this conference. The results obtained were a relaxation in the rigor of quarantine in Mediterranean ports and a scheme of rational maritime prophylaxis.

The succeeding conferences were more or less diplomatic and international in character. The conference of Venice in 1892 was called to consider the means of preventing direct communication between Europe and the infected regions of India, by way of Egypt and the Mediterranean. The conference succeeded, first, in regulating the duration and method of quarantine in the Suez canal; second, in preventing the passage through the canal of infected vessels; third, in requiring disinfection of suspected vessels; fourth, in creating the council of Alexandria, with a preponderance of European influence.

The resolutions adopted by the conference were embodied in an agreement which was signed by the plenipotentiaries and afterwards ratified by the powers represented, and the Khedive directed that the provisions therein contained should go into effect November, 1893.

The Eighth International Sanitary Conference met at Dresden March, 1893. The programme proposed for consideration the following subjects:

1. The duty of a Government when cholera is reported present within its territory.
2. The measures to be taken when cholera exists in a neighboring country.

The conference decided that the declaration of the presence of contagious disease is obligatory and that every means should be taken to prevent its spread. It formulated a system of sanitary measures which afforded a maximum of protection for public health, with a minimum of restriction on travel and traffic, fixed the period of detention and isolation, defined the distinction between medical surveillance and observation, and permitted a person arriving from an infected port to proceed to his destination, keeping him, when arrived, under observation during the period of incubation.

The first session of the conference, February 7, 1894, was occupied with the organizing of committees and the formulation of the programme of the conference.

The second session, February 14, was opened by the discussion of the quarantine and sanitary measures proposed for the Red Sea and the Hedjaz by the Ottoman Government. The Ottoman delegates showed a disinclination to accept international intervention in regard to the pilgrimage to Mecca.

At the third session, February 20, Dr. Shakespeare, delegate from the United States, drew attention to the fact that the preceding conferences had failed to provide for the sanitary supervision of immigration from Europe to America. He showed that immigration created an intimate relation between the sanitary condition of Europe and that of the United States. More than 400,000 immigrants from Europe and Asia Minor arrive annually in United States ports. The importation of cholera from the East into Europe by means of infected articles indicates the bases for measures of prevention against the introduction of cholera into the United States. In reply to this statement the delegates of France, Germany, Belgium, the Netherlands, Great Britain, Italy, and Austria-Hungary said that their respective Governments would probably consider a plan of reciprocal action with the United States with regard to the sanitary supervision of immigration. The president of the conference inquired whether Dr. Shakespeare based his proposition on the acceptance by his Government of the principles adopted by the conferences of Venice and Dresden. To this Dr. Shakespeare replied that there were general analogies but differences of detail between the pilgrimage and immigration, and furthermore that his Government had not been represented at the conferences of Venice and Dresden and had not formally accepted the principles adopted by those conferences.

PROTECTION OF THE PERSIAN GULF.

At its fourth session, February 28, 1894, the conference discussed the propositions submitted to it by the Persian Gulf committee. These propositions were prefaced by a brief description of the littoral of the Persian Gulf and of the conditions which render sanitary surveillance of the gulf ports essential to the protection of Europe against cholera. The ports named were Kuratchee, Gwadar, Mascate, Jastek, Bender Abbas, Lingeh, Bender Bushir, Fao, Mohammerah, Koveit, and Bahrein. They may be described as follows:

Kuratchee, port of northwestern India and eastern Beloochistan, second in importance only to Bombay. It possesses a superb harbor. It is the site of a government sanitarium and is a railway terminus.

Bender-Bushir, the most important port in Persia and the center of the maritime commerce of that country.

Koveit, the center for the trade in horses and cattle.

Bahrein, the principal island of an archipelago of 50,000 inhabitants. It is the central station of the pearl fisheries. In summer as many as 2,500 fishing boats with a complement of men numbering 25,000 assemble there.

The other ports named are small, but they maintain an active trade and are in weekly communication with Bombay, with which port they are connected by a line of six steam vessels belonging to the British India Steam Navigation Company. There is not a single sanitary agent at any one of the ports named and no sanitary surveillance of the coast line along its entire length.

The Ottoman Government proposes to establish a large lazaretto at Fao, on the west or Ottoman shore of the Shat el Arab, and a second lazaretto on the island of Salahigé, near Bassorah, and create a post of sanitary observation in the bay of Koveit, but these defensive measures will prove inadequate unless similar measures are taken on the Persian littoral of the gulf. The Persian Gulf committee have determined that sanitary agents should be stationed at the ports of Bender-Abbas, Bender-Bushir, and Mohammerah, and that sanitary surveillance is a necessity at the ports of Gevodar (Beloochistan), at Menama (capital of the Bahrein Islands), and at Muscate, on the coast of Oman.

The measures proposed by the committee were in detail as follows: (1) Sanitary regulations for vessels plying in the Persian Gulf; (2) sanitary posts. (See Annex 3.) These propositions were unanimously adopted by the conference, with the exception of the British delegates.

It may be noted here that the Persian Gulf committee was seriously divided in opinion as to the organization of the sanitary service for the Persian Gulf. The Ottoman delegates claimed that the council of health of Constantinople, aided by the Persian authorities, should be charged with the application of quarantine measures in the Persian Gulf. To this Dr. Pagliani (Italy) objected that the councils of health of Constantinople and Teheran were not so constituted as to afford the guaranties required by the conferences of Venice and Dresden.

M. de Giers (Russia) stated that there were serious objections to the connection of the sanitary service of the Persian Gulf with the council of Teheran. He stated that the existence of epidemic diseases in the ports of the Persian Gulf is now reported to the foreign legations by the council of health of Constantinople through its delegate at Teheran. He also drew attention to the absence of a protective system in Persia along the lines of land travel.

In this connection Count Rufstein (Austria-Hungary) proposed the organization of an international sanitary service in Persia, providing for: (1) A central health bureau at Teheran; (2) an international sanitary council; (3) posts of observation, sanitary posts; (4) lazarettos. The total annual cost of this system he estimated at 500,000 francs, to be divided as follows: European powers, 200,000 francs; Persia, 300,000 francs, plus the original cost of erecting buildings, etc.

The indifference of the Persian authorities to the importation of cholera and the total neglect throughout Persia of all sanitary precautions in regard to disinfection, water supply, hygienic conditions in cities, and the disposal of the dead seem to show that international control of sanitation in Persia is necessary for the protection of Europe. The question of the creation of a competent authority for applying quarantine measures in the Persian Gulf and the adjustment of expenses was referred to the committee on ways and means.

The British Indian delegates objected to the quarantine system proposed for the Persian Gulf. They stated that 98 per cent of the trade of the gulf is carried in Anglo-Indian vessels; that very few pilgrims reach the Hedjaz by way of the Persian

Gulf, and that the secretary of state of India has never received a report of an outbreak of cholera on a vessel from an Indian port trading in the Persian Gulf. They stated that their Government would consider the system proposed as a hindrance to traffic and would not consent to bear its part in the expense. They also objected to the location of a quarantine station at Fao on account of bad anchorage, insufficient water supply, insecure soil, and the presence of a form of pernicious fever, and claimed that reciprocal quarantine at Bassorah and Mohammerah would furnish ample protection against cholera for both the Ottoman and Persian coasts of the gulf.

Dr. Shakespeare (United States) introduced a resolution for the establishment of a large sanitary post similar to that at Camaran on one of the islands off Ras Mesandown, to have supervision of all pilgrim vessels entering the Persian Gulf, and to be under international control and maintained at international expense.

Annex 1.—Text of the agreement in regard to maritime quarantine signed by the delegates to the International Sanitary Conference of Paris, 1894.

(*A*) Sanitary police at the ports of departure of pilgrim vessels arriving from the Indian Ocean and Oceanica.

1. Medical inspection of all persons taking passage on board a pilgrim vessel made individually, by daylight, on land, and by a physician appointed by the local sanitary authority.

2. Thorough disinfection made on land under the direction of the physician appointed by the sanitary authority of all infected or suspected articles.

3. Refusal of embarkation to any person attacked with cholera or choleriform disorders.

4. When a case of cholera exists at the port embarkation on board of pilgrim vessels shall not take place until the persons to be embarked have been segregated and subjected to observation for five days.

(This article is subject to local modifications.)

5. Pilgrims shall be required to show that they possess means sufficient to defray the expenses of the voyage, going and returning, and for their maintenance at the holy places.

(*B*) Measures to be taken on board pilgrim vessels.

SECTION 1.—GENERAL REGULATIONS.

ARTICLE 1. These regulations apply to vessels transporting Musselman pilgrims to or from Mecca.

ART. 2. A vessel shall not be considered a pilgrim vessel which carries pilgrims of the better class as passengers in a proportion of less than 1 pilgrim to 100 tons burden.

ART. 3. All pilgrim vessels on entering or leaving the Red Sea shall comply with the regulations contained in the special regulations for the pilgrimage to the Hedjaz, to be published by the council of health of Constantinople in conformity with the principles laid down by the conference of Paris.

ART. 4. Steam vessels only shall carry pilgrims.

SECTION 2.—MEASURES TO BE TAKEN BEFORE DEPARTURE.

ART. 5. The captain of a pilgrim vessel is required to declare to the port authority at least three days in advance his intention of embarking pilgrims. He must also declare the date of intended departure and the port of distination.

ART. 6. The sanitary authority of the port shall then inspect and measure the vessel. The consul representing the flag carried by the ship may assist, if he so desires, at this inspection.

ART. 7. The port authority shall not permit the departure of a vessel until he is assured—

(*a*) That the vessel is clean and, if possible, disinfected.

(*b*) That it is in condition to undertake the voyage and that the sanitary conditions are good.

(*c*) That the food and fuel provided for crew and passengers are sufficient in quantity and good in quality.

(*d*) That the water is good and obtained from a pure source; that it is sufficient in quantity, protected from contamination on board, and dispensed by faucets.

(*e, f, g, h*) That the vessel carries distilling apparatus capable of producing 5 liters of water a day per capita for all persons on board, passengers and crew; that it carries a disinfecting stove and has on board a physician and a ship's medicine chest, and that the deck is clear.

ART. 8. The captain shall post notices drawn up in the principal languages spoken by the pilgrims stating—

1. Destination of the ship.
2. Daily ration of food and water.
3. The price of provisions not included in the daily distribution.

ART. 9. The captain shall not be free to leave port until he holds—

1. A list of the pilgrims whom he is authorized to embark, viséed by the port sanitary officer.
2. A bill of health stating the name, nationality, and tonnage of the vessel, name of the captain and physician, the number of persons embarked—crew, passengers, and pilgrims, nature of the cargo, place of departure and destination, and condition of public health in the port of departure.

ART. 10. The port sanitary authority shall take effective measures to prevent the embarkation of suspected persons and articles.

SECTION 3.—PRECAUTIONS TO BE TAKEN DURING THE VOYAGE.

ART. 11. Every vessel embarking 100 or more pilgrims shall carry a physician commissioned by the Government to which the vessel belongs. If the number of passengers exceeds 1,000 a second physician shall be engaged.

ART. 12. The physician should see that the rules of hygiene are observed on board, and that food and water are distributed according to agreement.

ART. 13. Pilgrims shall be lodged between decks.

ART. 14. The deck should remain clear. It should be placed at the disposal of the passengers.

ART. 15. Passengers shall be allowed to retain only such baggage as is strictly necessary.

ARTS. 17, 18, 19. The vessel shall be provided with latrines in the proportion of 1 to each 100 passengers. These shall not be located in the hold or between decks. They shall be cleaned three times daily and flushed with sea water.

ART. 20. Each person shall be gratuitously furnished with 5 liters of drinking water a day.

ART. 21. If there shall arise any doubt as to the condition of the drinking water, it should be boiled and sterilized, and the captain is directed to empty it overboard and replenish at the first stopping place.

ART. 22. Two kitchens shall be provided for the use of the pilgrims. They shall not be allowed to cook elsewhere.

ART. 23. Medical care and attendance shall be furnished gratuitously to the pilgrims.

ART. 24. A regularly organized infirmary shall be provided for the sick. It shall be large enough to accommodate 5 per cent of the passengers, with a space of 3 square meters per capita.

ART. 25. The vessel shall be provided with the means of isolation in case of choleraic attack. All articles that have come in contact with the sick shall be promptly disinfected. Articles of no value should be thrown overboard if the vessel is at sea, or else burned if the vessel is at port.

ART. 26. In case of a death occurring on board during the voyage the captain shall note the fact with all particulars.

ARTS. 27, 28. The bill received at the port of departure shall not be altered in any way during the voyage. It shall be viséd in every port at which the vessel stops by the sanitary authority, who shall note thereon:

1. The number of passengers landed or embarked.
2. Any facts touching the condition of the passengers and any incidents of the voyage.
3. The sanitary condition of the port at which the vessel is stopping.

ART. 29. The captain shall see that all prophylactic measures taken on board during the voyage are inscribed in the log.

ART. 30. The captain shall pay all sanitary taxes.

Section 4 relates to fines and penalties.

These regulations were adopted unanimously in committee except for the votes of the Ottoman and Greek delegations.

Annex 2.

SANITARY SUPERVISION OF THE PILGRIMAGE BY WAY OF THE RED SEA.

Pilgrim vessels arriving from the south shall, before proceeding to the Hedjaz, touch at the sanitary station at Camaran and there be subject to the following treatment:

Vessels declared upon medical inspection to be clean shall be allowed free pratique after compliance with the following regulations: The pilgrims shall be disembarked; they shall take a spray bath or a bath in the sea; their soiled linen and such of their baggage and effects as may be suspected of infection shall be disinfected. The duration of this process, including landing and reembarkation, shall not exceed forty-eight hours. If during this period no case of cholera, diarrhea, or choleriform disorder shall develop, the pilgrims shall be at once reembarked and the vessel shall proceed to the Hedjaz.

Suspected vessels—that is to say, vessels on board of which cholera declared itself at the moment of departure, but on which no new case has occurred within seven days—shall be treated as follows: The pilgrims shall be disembarked; they shall take a spray bath, or else a bath in the sea; their soiled linen and such of their baggage and effects as may be suspected of infection shall be disinfected, at the discretion of the medical officer. The duration of this process, including landing and reembarkation, shall not exceed forty-eight hours. If no case of cholera or choleriform disorder shall develop during this period, the pilgrims shall be at once reembarked, and the vessel shall proceed to Djeddah, where a second medical inspection shall be made on board. If the result is favorable, on the written and certified declaration, under oath, that no case of cholera has occurred during the voyage from Camaran, the pilgrims shall be disembarked. If, on the contrary, cholera or choleriform disorder shall have declared itself during the voyage, or at the moment of arrival, the vessel shall be remanded to Camaran, and there undergo a second time the treatment for infected vessels.

Infected vessels—that is to say, vessels on board of which cholera or choleriform disorder shall have declared itself within seven days—shall be treated as follows: The persons attacked with cholera or choleriform affections shall be disembarked and isolated in hospital. Thorough disinfection shall be performed. The other passengers shall be disembarked and isolated in groups, consisting each of as few persons as possible, in order that only a small front shall be exposed to choloraic attack should the disease develop. The soiled linen, utensils, and clothing of crew and passengers shall be disinfected; also the vessel itself.

The sanitary authorities shall decide whether the unloading of the larger baggage and the cargo is necessary, and whether the entire vessel or only a portion of it shall be disinfected.

The passengers shall remain five days at Camaran. If the cases of cholera date back for several days, the period of isolation may be curtailed. It shall vary according to the date of the last outbreak and in the discretion of the sanitary authority.

The vessel shall proceed to Djeddah, where thorough medical inspection shall be made on board. If the result is favorable the pilgrims shall be disembarked. If, on the contrary, cholera or choleriform disorder shall have developed on board, either at the moment of arrival or during the voyage from Camaran, the vessel shall be remanded to Camaran, and shall there undergo for a second time the treatment for infected vessels.

IMPROVEMENTS TO BE MADE AT THE SANITARY STATION OF CAMARAN.

(*A*) Complete abandonment of the island by its inhabitants.

(*B*) Means of securing the safety and facilitating the movement of vessels in the Bay of Camaran.

1. Installation of buoys and lights in sufficient numbers.

2 Construction of a mole or quay for landing passengers.

3. Separate wharfs for the landing of pilgrims belonging to the several encampments.

4. Lighters in sufficient numbers, with a steam tug, to facilitate the landing of passengers.

(*C*) Installation of a sanitary station, which shall comprise—

1. A system of railways connecting the wharfs with the executive and disinfection buildings and the camps.

2. Executive buildings and quarters for sanitary guards and others.

3. Buildings for the washing and disinfecting of nonportable and other articles.

4. Bath and dressing rooms for pilgrims.

5. Separate hospitals for the two sexes, completely isolated: (*a*) For the observation of suspects; (*b*) for cholera patients; (*c*) for contagious diseases other than cholera; (*d*) for ordinary diseases.

6. The camps shall be entirely separate and distinct from each other, and at as great a distance from each other as possible. The quarters for pilgrims shall be constructed under the best possible hygienic conditions and shall not contain more than twenty-five persons each.

7. There shall be a cemetery reservation, well located, remote from habitations, not in contact with the subterranean water level, and drained at a depth of 50 centimeters below the level of the graves.

(*D*) Necessary sanitary appliances.

1. Steam stoves.

2. Sprayers and chemical disinfecting apparatus and agents.

3. Distilling machines for the sterilization of water by heat and for the manufacture of ice; for the distribution of potable water, a system of water-supply pipes and closed reservoirs, air tight and emptied by pumps or stopcocks.

4. Bacteriological laboratory.

5. Installation of movable receptacles for fecal matter. Such matter shall be spread on a portion of the island remote from the camps.

6. Waste water shall be removed from the camps before it has time to stagnate.

(*E*) The sanitary authority shall see that each camp is furnished with shops for food and fuel.

The tariff of prices shall be fixed by a competent authority. The quantity and quality of the food supplied shall be inspected daily by the camp physician. Water is furnished gratuitously.

IMPROVEMENTS TO BE INSTITUTED AT THE SANITARY STATIONS OF ABOU-SAAD, VASTA, AND ABOU-ALI.

1. Establishment of two cholera hospitals, for men and women, at Abou-Ali.
2. Establishment of a hospital at Vasta for ordinary diseases.
3. Erection at Abou-Saad and Vasta of stone buildings capable of accommodating 500 persons in the proportion of 25 each to a building.
4. Installation of three disinfecting stoves at Abou-Saad, Vasta, and Abou-Ali.
5. Erection of spray baths at Abou-Saad and Vasta.
6. Installation of distilling machines, capable of furnishing each 15 tons of water per day, at Abou-Saad and Vasta.
7. The regulations in regard to cemeteries, fecal matter, etc., shall be the same as those in force at Camaran.
8. Disinfecting stoves and appliances shall be installed at Djeddah and Yambo for the sanitation of pilgrims leaving the Hedjaz.

REORGANIZATION OF THE SANITARY STATION OF DJEBEL-TOR.

With regard to the station at El Tor, the contracting powers leave it to the maritime council of Alexandria to carry out the plan agreed upon at the conference of Venice, observing only—

1. That it is necessary to have distilling machines at the station for sterilizing water.
2. That all provisions brought by pilgrims of Djeddah and Yambo, when cholera prevails in the Hedjaz, shall be disinfected, or completely destroyed when found to be unsanitary.
3. That measures should be taken to prevent pilgrims using leather water vessels, these water bottles to be replaced by vessels of terra cotta or by metalic buckets.
4. That each section of the camps should be provided with a physician.
5. That a port captain should be appointed at El Tor to direct landings and reembarkations and to enforce the observance of the regulations by the ships' captains.

REGULATIONS FOR PILGRIMS ARRIVING FROM THE NORTH.

1. *Outward bound.*—If cholera is not reported present at the port of departure, and if no choleriform disorder has declared itself during the voyage, the vessel shall be at once admitted to free pratique. If cholera is reported present at the port of departure or in its vicinity, or if a choleriform disorder has developed during the voyage, the vessel shall undergo at El Tor the treatment prescribed for vessels arriving at Camaran from the south.

2. *Homeward bound.*—If cholera is not reported present in Hedjaz and has not been so reported during the pilgrimage, the vessel shall be subject at El Tor to the treatment prescribed for clean vessels at Camaran—that is to say, pilgrims shall be landed; they shall take a spray bath, or a bath in the sea; such of their baggage and effects as may be suspected of infection shall be disinfected, at the discretion of the sanitary authority, the duration of the whole process, including landing and reembarkation, not to exceed forty-eight hours. If cholera is reported present in the Hedjaz, or has been so reported during the pilgrimage, the vessel shall be subject at El Tor to the treatment prescribed for the treatment of infected vessels at Camaran—that is to say, the persons attacked with cholera or choleriform disorder shall be landed and isolated in hospital. Thorough disinfection shall be performed. The other passengers shall be isolated in groups, consisting each of as few persons as possible, in order to present a small front to choleraic attack in case of an outbreak in any particular group. The soiled linen, clothing, and utensils of passengers and crew shall be disinfected, also the vessel itself. The local sanitary authority shall decide whether the unlading of the larger baggage and the cargo is necessary, also whether the entire vessel or only a portion of it shall be disinfected. All pilgrims

shall be subjected to an observation of seven full days, dating from the termination of the process of disenfection. If a choleriform disorder develops in any section, the period of seven days shall begin, for this section, from the day on which the last case was declared.

SANITARY MEASURES TO BE APPLIED TO PILGRIMS LEAVING THE HEDJAZ BY THE SEAPORTS.

The measures to be adopted for the departure of pilgrims going south from Djeddah and Yambo shall be the same as those in force for the departure from ports situated beyond the Straits of Bab-el-Mandeb, viz:

1. Medical inspection made individually, by daylight, on land, and at the moment of departure, by a physician appointed by the local sanitary authority, of all persons taking passage on a pilgrim vessel.

2. Thorough disinfection made on land, under the superintendence of the physician appointed by the sanitary authority, of all infected or suspected articles under provisions of article 5 of the first regulations inserted in Annex IV of the conference of Venice.

For all pilgrims embarking on vessels going north disinfection shall be performed at El Tor, except when cholera prevails in the Hedjaz. In this case the measures herein named shall be applied to these vessels at Djeddah and Yambo.

(Abou-Saad, Abou-Ali, and Vasta are small islands situated near Djeddah, on which a lazaretto has been established.)

Annex 3.—Protection of the Persian Gulf.

REGULATIONS.

An infected vessel is one which has cholera on board, or on which new cases have occurred within seven days.

A suspected vessel is one which has had cholera on board, either at the time of departure or during the voyage, but on which no new case has occurred within seven days.

A clean vessel is one which, although it may arrive from an infected port, has had no case of cholera on board, either at the time of departure, during the voyage, or at the time of arrival.

Infected vessels shall be treated as follows:

1. The sick shall be promptly landed and isolated.

2. Other passengers shall be landed, if possible, and subjected to an observation, the duration of which shall depend on the sanitary condition of the vessel and the date of the last case on board, but which shall never exceed five days.

3. Soiled linen and effects of passengers and crew, when declared infected by the port sanitary authority, shall be disinfected, also the vessel itself or the part of the vessel contaminated.

Suspected vessels shall be subject to—

(1) Medical visit; (2) disinfection; (3) emptying of the bilge water and renewal of potable water supply.

Five days' observation of passengers and crew is recommended; also detention of crew on board, except when the service of the vessel requires their presence on shore.

Clean vessels shall be at once admitted to free pratique. The port sanitary authority may apply to them the measures prescribed for suspected vessels, and may demand a certificate to the effect that there was no case of cholera on board at the time of departure. A vessel which shall decline compliance with the requirements of the port authority shall be free to put out to sea. It may land its cargo under the following conditions:

1. Isolation of the vessel, crew, and passengers.
2. Emptying of the bilge water after disinfection.
3. Renewal of potable water supply.

SANITARY POSTS.

1. At Fao, or its proximity, there should be a large lazaretto on terra firma, with complete sanitary service, having under its direction the sanitary posts of the Persian Gulf.

2. There should also be a small lazaretto on one of the two Ottoman Islands, Salahiyé or Yilaniyé, situated near Bassorah, to have oversight of persons who may have escaped inspection at Fao.

3. Continuation of the sanitary post now in operation at Bassorah.

4. Establishment of sanitary post in the bay of Koveit, to have oversight of travel from Bahrein, and of the transportation of bodies conveyed by caravan for burial in the holy places of Kerbela.

5. Sanitary post at Menama, capital of the Bahrein Islands, to have oversight of the pearl fisheries.

6. Sanitary post at Bender-Abbas.
7. Sanitary post at Bouchir.
8. Sanitary post at Mohammerah.
9. Sanitary post at Gwodar, in Beloochistan.
10. Sanitary post at Mascate, on the coast of Oman.

Annex 4.

DIRECTIONS.

1. The application of the measures adopted by the conference in regard to the pilgrimages shall be intrusted to a committee chosen from among the members of the council of health of Constantinople. This committee shall be composed of three representatives of Turkey and of the several powers who have accepted the sanitary agreement signed by the conferences of Venice and Dresden. The president of the committee shall be an Ottoman.

2. To secure effective service at the several sanitary stations competent corps of physicians, disinfectors, mechanics, and sanitary guards, recruited from among ex-officers, commissioned and noncommissioned, shall be created.

3. The expense of carrying out the system proposed by the conference shall be divided between the Ottoman Government and the council of Constantinople, according to the scale already fixed by the several powers interested.

4. The sanitary authority at the Ottoman port of arrival or departure shall draw up a statement of any infraction of this agreement, to which the captain of the offending vessel shall attach any explanation he may have to make. A certified copy of this statement shall be transmitted to the consul representing the country to which the vessel belongs. The consul shall require the fine to be placed in his hands. In the absence of the consul the fine shall be deposited with the sanitary authority. The fine shall ultimately go to the council of Constantinople when the consular commission shall have declared it valid. A second certified copy of the statement shall be forwarded to the council of Constantinople, who shall refer it to the consular commission.

5. A consular commission shall be formed at Constantinople to have cognizance of disputed cases, and to act as judge between the sanitary agent and the ships' captains. It shall be elected every year.

6. The taxes and sanitary fines shall not be diverted to any objects but those relating to the sanitary councils.

QUARANTINE STATIONS.

The island of Camaran is 180 marine leagues distant from the straits of Bab-el-Mandeb, 45 from Hodeida, 18 from Loheya. Its length is 11 miles; breadth, 3½; altitude, 50 feet. The soil of the island is sandy and pebbly. The water is generally brackish. The temperature does not exceed 44° C. There are five villages on the island. The retention of Camaran as a quarantine station for pilgrims was opposed in committee on the ground of unsanitary local conditions. It was objected to it that the soil was already infected from cholera excreta, and that in establishing a permanent quarantine station a fresh and perfectly healthy site should be selected. The objections made were overruled and Camaran was retained as a pilgrim quarantine station. The number of pilgrims to be received and treated at any one time was limited to 3,000.

LAZARETTO OF ABOU-SAAD AND VASTA.

This station is situated on two islands bearing these names, in the vicinity of Djeddah. It is intended to receive pilgrims arriving from points north and south of the Red Sea, and is kept open throughout the year, whereas the station at Camaran is in operation only for six months, or during the pilgrimage. These islands are very narrow and can accommodate only 500 persons at any one time. The station was established in 1887.

Surgeon-General Cunningham (British India) made a detailed report in committee against quarantine at the entrance of the Red Sea. He asserted that detention at Camaran was unnecessary, the pilgrims having passed the whole period of the incubation of the disease on board ship and under medical observation. Camaran was made a quarantine station in 1881. Since that date all pilgrim vessels going to Mecca have been obliged to disembark their passengers on the island, even when the vessel had been in good sanitary condition from the time of its departure from India. He drew attention to the fact that detention at Camaran nullifies the precautions taken on board ship and at the port of departure. The careful medical examination before embarkation, the refusal to admit on board any suspected person or article of baggage, and the presence on board the vessel of a physician and a disinfecting store would seem to guarantee favorable sanitary conditions during the voyage. Pilgrims thus started on their journey, and protected during its course, arriving at Camaran after a voyage of twelve or fourteen days, in perfect sanitary condition, are landed on the island and detained under wretched conditions as to food and lodging and during a season of the year when the heat is intolerable to pilgrims from the cooler latitude of northern India. It would be a miracle if cholera or other sickness did not break out among them. He spoke of the system of water supply and the lodging of pilgrims at Camaran as deplorably bad, and stated that quarantine at that point had notoriously failed hitherto to protect the Hedjaz from choleraic outbreak.

The British Indian delegates also formally objected to the five days' observation before embarkation at Indian ports. They stated that the situation of Bombay, which is the principal Indian pilgrim port, made it impossible to construct barracks large enough to accommodate, under hygienic conditions, the number of pilgrims that assemble there. These pilgrims come for the most part from northern India, where the climate is comparatively cool, and to herd them in unsuitable quarters during the hot season for five days would be a violation of hygienic principles. Moreover, many of the pilgrims arrive by railway as ordinary passengers, and present themselves for embarkation on the day of departure of the vessel. A complete system of railway passenger inspection and interrogation would be required to verify each pilgrim.

The consensus of opinion in the committee that considered these objections was in favor of the maintenance of a second line of defense against cholera at the entrance of the Red Sea. It could not be shown that the precautions taken before embarkation and during the voyage were absolutely efficacious, and the enormous increase of cholera in India (700, 000 choleraic deaths having been reported in 1892) made it absolutely necessary to prevent any vessel carrying a latent germ of cholera to reach the seaports of the Hedjaz.

At the closing session of the conference, April 3, the delegates of the United States announced that they were prepared to accept the agreement based on the report of the Red Sea commission, with some reservations. They declined to accept the interpretation placed on paragraph 4, Section A, annex 1, which allowed observation of pilgrims on board ship, provided the vessel were furnished with the suitable appliances for disinfection, instead of observation on shore and by groups. They also objected to the proposition to place the control of quarantine and sanitation in the Red Sea in the hands of a committee composed of representatives of the several powers, but excluding therefrom representatives of powers that have not accepted the agreements of the conferences of Venice and Dresden. They claimed that their Government, which was not represented at these conferences, was entitled to a voice in an international committee organized for the protection of the health of Europe and America.

The delegates of Great Britain signed the agreement, but withheld their acceptance of (1) paragraph 5, Section A, annex 1; (2) article 13, annex 1, Section B; (3) annex 3.

The first article relates to the obligation imposed on each pilgrim to show that he possesses the means of defraying the expenses of the pilgrimage. Surgeon-General Cunningham said that the British Government allowed complete religious liberty in all parts of the British possessions, so long as the law of the land was observed. He could, therefore, definitely state that the government of India would never enact a law discriminating against any of its Mussulman subjects.

The second article objected to relates to the space between decks allotted to each pilgrim.

The third objection made was to the annex relating to the Persian Gulf.

The Italian delegates made the same reservations as the British delegates.

The delegate of Germany reserved for his Government all advantages that might result from the reservations made by the British delegates.

The delegates from Greece declared themselves as adopting only those provisions of the agreement which did not conflict with the regulations already in force in Greece.

The delegates of the low countries stated that they were prepared to sign with a reservation in regard to the space allotted each pilgrim, the space and surface fixed by Indo-Dutch regulations appearing to them ample.

The delegate of Norway and Sweden declared that his instructions permitted him to sign only *ad referendum*. He therefore withheld his signature.

The Turkish delegates stated that they signed with reservation of all provisions conflicting with Ottoman sanitary regulations.

The delegates of France, Austria-Hungary, Belgium, Denmark, Spain, Italy, Greece, Portugal, and Russia declared that they reserved for their respective governments all advantages resulting from the reservations made by Great Britain, and of which Germany had claimed the full benefit.

The president then expressed for the conference the following:

1. Supervision of the pilgrim caravans going by land to Mecca and Medina. It is the earnest wish of the conference that the measures taken along the routes of land travel in the East may be in accordance with the principles adopted by the conferences of Venice and Dresden, and that long land quarantines may be replaced by the modern methods of disinfection.

2. Protection of Persia. The conference earnestly hopes that sanitary measures conformed to those formulated by the conferences of Venice, Dresden, and Paris may be adopted on the Persian frontiers.

3. Acceptance of the agreements of the conferences of Venice and Dresden.

The delegates of Germany, Austria-Hungary, Belgium, France, Great Britain, Italy, the Netherlands, and Russia express the hope that the powers that have not accepted the sanitary agreements signed at Venice and Dresden will hereafter accept the said agreements.

The conference was formally adjourned April 3, 1894.

YELLOW FEVER.

The year 1894 has not shown unusual development of yellow fever outside of its normal zone. The United States has escaped entirely any recrudescence of the late epidemic in Georgia, reported in previous annual report. In Brazil, the city of Rio de Janeiro, and in Cuba, the cities of Havana, Cardenas, Matanzas, and Santiago de Cuba report several hundred cases. Puerto Rico (West Indies) and San Salvador (Salvador) also report 184 and 193 cases, respectively, the latter with mortality above 50 per cent. The following table shows its distribution as reported to the Bureau between April 26 and November 30, 1894:

Places.	Date.	Cases.	Deaths.	Remarks.
Brazil:				
Rio de Janeiro	Apr. 29-Sept. 15		438	
	Oct. 13-20		1	
Santos	Oct. 6-13	2		
Cuba:				
Cardenas	July 1-Sept. 15	158	28	
Cienfuegos	Apr. 29-Oct. 29	40	58	
Cruces City	Aug. 1			Fever reported.
Guantanamo	June 1-Aug. 31	12	11	
Havana	Apr. 27-Nov. 22	832	316	
	Nov. 22-Dec. 6	32	12	
Manzanillo	July 1-Aug. 31	4	2	
Manzcaragna	Aug. 1			Yellow fever reported.
Matanzas	June 20-Oct. 17	100	26	
	Nov. 1-7	5	2	
Sagua la Grande	July 1-7		1	
Santiago de Cuba	Apr. 26-Oct. 27	102	29	
	Oct. 28-Nov. 10	11	5	
Equador:				
Guayaquil	May 4-10		3	
Honduras:				
Nacaome	Apr. 8-28		5	
Mexico:				
Laguna	Sept. 13			Do.
Vera Cruz	Apr. 27-Oct. 18		197	
	Nov. 1-8		2	
	Nov. 15-22		1	
Nicaragua:				
Granada	Sept. 14			Yellow fever reported to be epidemic.
Managua	do			
Panama:				
Panama	Sept. 13	1		Yellow fever reported. (Infection at Guayaquil.)
Salvador:				
La Libertad	Aug. 3			Yellow fever reported.
San Salvador	July 14-Aug. 25	26	15	
	Sept. 10-30		49	
	Oct. 24-Nov. 8	167	94	
West Indies:				
Antigua	Apr. 29-May 5	1	1	
Puerto Rico (San Juan)	June 4-Sept. 6	184	29	Confined to barracks. Fever not among shipping.
	Nov. 1-14		2	
Port of Spain (Trinidad)	July		1	
Yucatan:				
Merida	May 25-31		1	
Venezuela:				
Betizogue	Nov. 6			Yellow fever reported.
Maracaibo	Sept. 15-29	7	1	
	Nov. 17-24	1	1	

At the meeting of the International Congress of Hygiene and Demography, which was opened September 2, 1894, Dr. Charles Finlay, of Havana, in a paper on yellow-fever infection, expressed the opinion that partial or total immunity from yellow fever probably results from even the mildest yellow-fever infection. A succession of mild attacks appears not infrequently to endow the person thus affected with total immunity. The adult natives of Havana probably owe their immunity to the effect of slight attacks of yellow fever in childhood. Dr. Finley alludes to the theory which attributes the spread of yellow fever to mosquito bites, and states that in the course of thirteen years ninety persons were shown to have been inoculated with yellow fever by mosquitoes.

SPECIAL PRECAUTIONS ADOPTED BY THE BUREAU TO PREVENT THE INTRODUCTION OF YELLOW FEVER IN 1894.

Notwithstanding the careful post-epidemic disinfection that was carried on by the Bureau in Brunswick and in Jesup in the fall of 1893, some apprehension existed as to a recurrence of the fever in those cities during the succeeding summer of 1894. In order that the Bureau might be promptly informed of any suspicious case, overtures were made to the city of Brunswick for the stationing of a medical officer of the Marine-Hospital Service in that city in order to make prompt report of the appearance of any suspicious case. The following correspondence explains itself. No suspicious case occurred:

SANITARY INSPECTION OF THE CITY OF BRUNSWICK AND INSPECTION OF LOCAL QUARANTINES ON THE SOUTH ATLANTIC AND GULF COASTS.

OFFICE OF THE SUPERVISING SURGEON-GENERAL,
MARINE-HOSPITAL SERVICE,
Washington, D. C., April 27, 1894.

SIR: Referring to the epidemic of yellow fever in Brunswick last season, I beg to invite your attention to the fears of a possible recurrence of the disease during the coming summer and to the necessity of making provision for the prompt discovery of any case occurring in either Brunswick or other city on the South Atlantic or Gulf coast. For this purpose it is my intention, with your approval, to detail Surgeon Murray, whose treatment of yellow fever in Brunswick last season has given him the confidence of that community, and Dr. John Guitéras, who is an acknowledged expert in determining doubtful cases, for duty in Brunswick and other cities. It is proposed to keep Surgeon Murray in Brunswick most of the time, and to assign to Dr. Guitéras the duty of examining the mortuary records of the several Southern cities, with a view to ascertaining any unusual mortality from fever, which is usually a forerunner of an epidemic of yellow fever. He will also be directed to pass upon suspicious cases when reported. Dr. Guitéras is professor of pathology in the University of Pennsylvania, was formerly a regular officer of this Service, was employed as sanitary inspector, and rendered invaluable aid in Brunswick last season.

In view of the severe epidemic of yellow fever in Rio de Janeiro during the past winter, and its presence as usual in Havana and elsewhere, unusual precautions should be taken during the coming season to prevent its introduction into the United States. To this end I consider it necessary to have frequent inspections made of local quarantines on the South Atlantic and Gulf coasts, and shall detail P. A. Surg. J. H. White, now stationed at Savannah, to inspect quarantines on the North and South Carolina and Georgia coasts; Surgeon Murray to inspect a portion of the

Florida coast in addition to his duties in Brunswick; Assistant Surgeon Eager, on duty at Key West, to inspect the local quarantine there; Surg. W. H. H. Hutton to inspect the local quarantines on the Gulf coast from the eastern boundary of Louisiana to and including Apalachicola, Fla.; Surg. J. M. Gassaway, located at New Orleans, to inspect the local quarantines of Louisiana and Texas.

These inspectors, besides assuring the Department that the regulations are being complied with, will aid also in securing prompt information of appearance of infected vessels at the quarantines and of suspicious cases in the several localities, and will, I believe, cause a degree of confidence in the sections liable to be visited by yellow fever.

I have the honor to remain, very respectfully, yours,

WALTER WYMAN,
Supervising Surgeon-General, Marine-Hospital Service.

To the SECRETARY OF THE TREASURY.

OFFICE BOARD OF HEALTH,
Brunswick, Ga., May 2, 1894.

DEAR SIR: At the meeting of the board of health of our city it was unanimously voted that the chairman communicate with you relative to sending an expert here during the season of possible outbreak of yellow fever this summer from any germ which may have hibernated from last year's epidemic. * * * Our board is in full sympathy with this Service and willing to have its concert assistance in all sanitary matters locally and pertaining to the country at large. In view of the above facts, the board requests me to say a rigid watch and inspection will be kept upon every department of our sanitary environment, and as you have already competent representatives in the sanitary inspector at quarantine and myself, as your acting assistant surgeon, with all experience in diagnosis of yellow fever in three epidemics, you can have the assurance of prompt and reliable reports from this port of any suspicious cases of fever or other epidemic and infectious diseases. Our city is just completing 6 miles of sewerage and subsoil drainage, including the infected area of last summer's infection, and our sanitary corps are energetically cleaning up the city. The outlook from present standpoint is most encouraging, and while there may be a few sporadic cases of yellow fever, I seriously doubt any possibility of its spread or an epidemic.

In conclusion, should you still desire further representation in the person of an additional inspector, this board will cheerfully extend its cooperation, assuring you of our appreciation and gratitude for the valuable aid of the Marine-Hospital Service during the past epidemic.

I have the honor to remain, very truly and respectfully yours,

HUGH BURFORD, M. D.,
President Board of Health.

SURGEON-GENERAL, MARINE-HOSPITAL SERVICE.

OFFICE SUPERVISING SURGEON-GENERAL,
MARINE-HOSPITAL SERVICE,
Washington D. C., May 7, 1894.

DEAR SIR: I am in receipt of your letter of the 2d instant, communicating the expression of your board concerning the sending of an expert during the coming season.

I can not refrain from congratulating the board upon the vigorous measures which have been taken during the winter season with regard to sewerage, subsoil drainage, and other sanitary measures. I had been previously informed of the energy displayed by the city of Brunswick in taking means to prevent a return of the yellow fever, and while, as you intimate, it may prove to have been entirely unnecessary to have an expert on the grounds during the coming season, still I believe the fact that one is stationed there, and that, too, with the ready acquiescence of your board, will be of practical benefit to the city. Surgeon Murray has been detailed for the purpose, and will have with him, from time to time, Dr. John Guitéras. The latter's duties will also include observations in other parts of the South.

Permit me, in closing, to express my appreciation of your assurance of cheerful cooperation, and your kind expressions regarding the aid of the Marine-Hospital Service during the past epidemic.

Respectfully, yours,

WALTER WYMAN,
Supervising Surgeon-General, Marine-Hospital Service.

Dr. HUGH BURFORD,
President Board of Health, Brunswick, Ga.

Particular attention was paid to the entire South Atlantic and Gulf coasts. From Wilmington, N. C., to Brownsville, Tex., during the yellow-fever season the coast was under almost constant patrol by officers of this Service, inspecting local quarantines and reporting upon such deficiencies as were found to exist.

For the purpose of inducing shipmasters coming from infected countries with yellow fever or suspected yellow fever on board their vessels to at once repair to the outlying refuge stations of the Marine-Hospital Service, the following letter was addressed to the Secretary of State, who in turn made the desired request of the consuls in South and Central American, Mexican, and West Indian ports. As a result, a much larger number of vessels than usual were received at the Dry Tortugas Quarantine Station.

TREASURY DEPARTMENT,
Washington, May 5, 1894.

SIR: I have the honor to request that the United States consuls stationed in the Atlantic seaports of South America, Central America, and Mexico, and in all West Indian ports, particularly ports in Cuba, be instructed to notify masters of vessels leaving said ports for any port in the United States between the southern boundary of Virginia and the western extremity of the Mississippi coast, to the following effect, namely: That if yellow fever, or fever that is suspected of being yellow fever, appears on board any such vessel during the voyage, or if the master has reason to believe during the voyage that the vessel is infected with yellow fever, said vessel en route to her port of destination should repair to the United States quarantine station at Dry Tortugas, Fla., or, if more convenient, to the United States quarantine station at Blackbeard Island, Sapelo Sound, Georgia, for inspection or treatment. This procedure will be likely to save the vessel both time and expense. No quarantine fees are charged at the national quarantine stations.

I have further to request that the following additional instructions be transmitted to the United States consuls in all Cuban and other West Indian ports, namely: Masters of sailing vessels from Cuban ports in which yellow fever prevails, and from other West Indian ports in which yellow fever may prevail, bound for any port in the United States south of the southern boundary of Virginia, should be advised during the quarantine season, between May 1 and November 15, to proceed via the United States quarantine station at Dry Tortugas, Fla., or the United States quarantine station at Blackbeard Island, Sapelo Sound, Georgia, for inspection or treatment.

I have the honor to remain, very respectfully, yours,

W. E. CURTIS, *Acting Secretary.*

The SECRETARY OF STATE.

INSPECTION OF THE MORTALITY RECORDS OF SOUTHERN CITIES DURING THE SEASON.

In order that the Bureau might be informed of the presence of suspicious cases in any one of the Southern seaboard cities, Dr. John Guitéras was appointed sanitary inspector to visit said cities and make report. Following are his instructions:

TREASURY DEPARTMENT,
OFFICE OF THE SUPERVISING SURGEON-GENERAL,
MARINE-HOSPITAL SERVICE,
Washington, D. C., May 29, 1894.

SIR: Having arrived in Washington, as per order, you are directed to proceed without delay to Wilmington, N. C., for the purpose of beginning the investigation hereinafter mentioned. You are ordered to visit the seaport cities of the Southern States that are exposed to the introduction of yellow fever, with a view to studying the diseases that usually give rise to questions of diagnosis with yellow fever in the beginning of epidemics.

You will further make a study of the death rate in the said seaports, comparing the records of previous epidemics with recent years of exemption, in order to obtain data concerning the morbidity and mortality of the preepidemic period that may be of value in giving early notice of the presence of the disease.

You are informed that access to the various records of the different cities may be had only through the permission of the State or municipal officer, and you are directed to put yourself in communication with the proper authorities, and ask permission for prosecuting the said work, showing, if need be, this letter for the purpose specified.

Any important facts or deductions therefrom which may be elicited by your labors you will consider confidential, excepting that you may communicate the same to the proper State or local authorities, on request.

You will report by letter to the Bureau at least once each week, giving a brief statement of the progress of your work and keeping the Bureau accurately informed of your address.

Your duties further will be to respond to orders to investigate cases of fever that are suspected of being yellow fever. Should reports of such cases reach you, notify the Bureau immediately and investigate without delay, placing yourself in accord with the local authorities.

You will make a full report to the Bureau on termination of this detail for publication.

Respectfully, yours,
WALTER WYMAN,
Supervising Surgeon-General Marine-Hospital Service.

Dr. JOHN GUITÉRAS,
Sanitary Inspector, Marine-Hospital Service, Washington, D. C.

The method of Dr. Guitéras of determining the probability of yellow fever existing in a given city is set forth in the following article, which, though prepared for presentation before the American Public Health Association, is pertinent to the subject under consideration, and is herewith embodied in full:

PREVENTION OF THE SPREAD OF YELLOW FEVER.*

[By Walter Wyman, Surgeon-General Marine-Hospital Service.]

One of the prime factors in the prevention of the spread of yellow fever is an early knowledge of its existence. A study of the history of nearly all epidemics will show that the disease has gained considerable headway before its existence has been admitted or publicly announced. The reasons for this are obvious. Often there is a genuine doubt in the mind of the practitioner, and the ability to accurately and positively diagnose yellow fever is not possessed by every physician. When in serious doubt, the fear of raising alarm, with all the consequent damage to the commerce of the city or town, induces the practitioner to hold his peace; or he may absolutely conceal the cases, when known, in the hope that they may prove sporadic.

For example, during the examinations which were made of the mortuary records of Brunswick, Ga., in connection with the yellow fever epidemic there in 1893, it was demonstrated, by a process of reasoning to be explained further on, that yellow fever had prevailed in Brunswick in 1890, and had been kept concealed. Not only did the mortuary records show this, though the cases were not diagnosed as yellow fever, but evidence of creditable citizens has been obtained to this effect; and reliable testimony, that one of the physicians of Brunswick had made the statement in the fall of 1890, that yellow fever was prevalent—almost epidemic—and "if the Lord did not send a frost soon, it would be impossible for them longer to conceal it." It is known now that yellow fever had existed last year a month prior to the death of Assistant Surgeon Branham and prior to its being declared epidemic.

It is evidently, therefore, of the highest importance that, when suspicious cases are announced, they should be passed upon by some well-known expert, whose decision will be accepted as final, and who is free from all local influence. Acting upon this theory, the Marine-Hospital Service does not hesitate to send immediately an expert to any locality suspected of being infected with yellow fever. One who can proclaim the disease if it exists, without bringing upon himself the anathemas of friends, associates, and city authorities, and the ruin of his professional prospects.

A new method of determining the presence of yellow fever, in some cases with positive accuracy, has been announced by Dr. John Guitéras, professor of pathology in the University of Pennsylvania, and at present sanitary inspector of the Marine-Hospital Service. I can best explain his theory by reading his letter to me upon the subject:

PHILADELPHIA, PA., *September 18, 1894.*

SIR: According to promise, I give you in brief the practical application of the studies I have made of the death rate in relation to yellow fever.

I have frequently found peculiar features of the mortality immediately preceding the acknowledgment of the presence of an epidemic of yellow fever. When these features are sufficiently pronounced, they enable a careful student—

1. To announce, without fear of contradiction, the existence of a commencing epidemic of yellow fever, when, perhaps, it is denied on the ground of carelessly observed clinical data.

2. To point out the existence and the date of beginning and ending of outbreaks in past years, which outbreaks had not been generally, if at all, recognized.

3. The student is further enabled to allay excitement, and silence false and damaging rumors as to the existence of yellow fever in a locality. He may even foretell, with some degree of certainty, that an epidemic of yellow fever is not likely to arise within the city and season, subject to his observation

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* Presented at the Montreal meeting of the American Medical Association, September 25–28, 1894.

These accomplishments, theoretically, all amount to the same thing, namely, the finding of yellow fever through other than bedside observations; but I thus separate them, because, practically, they deal with queries that present themselves to the so-called yellow-fever expert as distinct problems of great importance.

The peculiar features of the mortality upon which the solution of the above problem is based are an unusual preponderance of deaths in the white population in general, and especially of white children, and natives of the northern section of the country and Europe. The causes of death that are found to account for this increase of the white mortality are acute cerebral and gastro-enteric affections of children and, above all, acute manifestations of malaria.

This means, in my opinion, that errors of diagnosis are made in the early stages of the epidemic and that frequently the case which is supposed to be the starting point of an outbreak is not the first case of yellow fever occurring in that particular epidemic. Isolated cases have developed in the earlier portion of the summer and, I believe, not rarely are the result of importation that has taken place toward the end of the preceding season or during the winter or spring.

The errors of diagnosis between the yellow and the malarial fevers will be the subject of a special report. Much of what was written along our Atlantic border concerning the malarial fevers in the earlier days of the American school of medicine shows the frequency of these errors. The bilious remittent fever was frequently yellow fever. The former disease gradually disappeared with the retreat of yellow fever toward its tropical home.

Yours, very truly,

JOHN GUITÉRAS.

Dr. WALTER WYMAN,
Surgeon-General Marine-Hospital Service.

Acting upon the theory advanced in this letter and with a strong determination to promptly prevent the spread of yellow fever during the present season, as early as July of the present year Dr. Guitéras was ordered to visit the various coast cities of the South from Baltimore to Mobile and to examine the mortuary records thereof, and to promptly report to the Marine-Hospital Bureau any suspicion of yellow fever in any of the cities resulting from said investigation. He has just concluded his examination of the mortuary records of the cities of Baltimore, Norfolk, Wilmington, Charleston, Savannah, Jacksonville, Key West, Tampa, and Mobile. In none of these records has he found any suspicion of the existence of yellow fever at this season.

The following blank form has been provided to be filled out at stated intervals by the Marine-Hospital officers stationed in these various cities, which will in future give the Bureau the desired information and call attention to any possible danger, as shown by said records:

MONTHLY MORTALITY STATISTICS, PORT OF , MONTH OF , 189 .

Ages		First to twelfth month.				1 and 2 years.				3 to 5 years.				6 to 10 years.				11 to 15 years.				16 to 20 years.				21 to 40 years.				41 to 60 years.				Over 60 years.				
		a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d	
Diseases.	Races.	Natives of city.	Southern sea-border States.	Other States and countries.	Unknown.	Natives of city.	Southern sea-border States.	Other States and countries.	Unknown.	Natives of city.	Southern sea-border States.	Other States and countries.	Unknown.	Natives of city.	Southern sea-border States.	Other States and countries.	Unknown.	Natives of city.	Southern sea-border States.	Other States and countries.	Unknown.	Natives of city.	Southern sea-border States.	Other States and countries.	Unknown.	Natives of city.	Southern sea-border States.	Other States and countries.	Unknown.	Natives of city.	Southern sea-border States.	Other States and countries.	Unknown.	Natives of city.	Southern sea-border States.	Other States and countries.	Unknown.	Malarial diseases in detail. (See Directions, par. 1.)
1. Malaria, acute	W.																																					
	C.																																					
2. Malaria, chronic	W.																																					
	C.																																					
3. Fevers, unclassified	W.																																					
	C.																																					
4. Yellow fever	W.																																					
	C.																																					
5. Typhoid fever	W.																																					
	C.																																					
6. Typho-malarial fever	W.																																					
	C.																																					
7. Continued fever	W.																																					
	C.																																					
8. Other fevers	W.																																					
	C.																																					
9. Measles	W.																																					
	C.																																					
10. Scarlatina	W.																																					
	C.																																					
11. Diphtheria	W.																																					
	C.																																					
12. Pneumonia	W.																																					
	C.																																					
13. Erysipelas	W.																																					
	C.																																					

14. Pyæmias	W.																																				
	C.																																				
15. Dysentery	W.																																				
	C.																																				
16. Trismus	W.																																				
	C.																																				
17. Other forms of tetanus.	W.																																				Premature.
	C.																																				
18. Tuberculosis	W.																																				Stillborn.
	C.																																				
19. Syphilis	W.																																				Malformations.
	C.																																				
20. Other infections	W.																																				Debility.
	C.																																				
21. Acute gastro-enteric affections.	W.																																				Senility.
	C.																																				
22. Chronic gastro-enteric affections.	W.																																				Other diseases not specified.
	C.																																				
23. Infantile wasting diseases.	W.																																				
	C.																																				
24. Liver	W.																																				
	C.																																				
25. Liver	W.																																				
	C.																																				
26. Anæmia	W.																																				
	C.																																				
27. Bronchitis, acute	W.																																				
	C.																																				
28. Bronchitis, chronic	W.																																				
	C.																																				
29. Congestion of lungs	W.																																				
	C.																																				
30. Lungs	W.																																				
	C.																																				
31. Pleura	W.																																				
	C.																																				
32. Meningitis	W.																																				
	C.																																				
33. Cerebral congestion of children.	W.																																				
	C.																																				
34. Teething	W.																																				
	C.																																				
35. Infantile eclampsia	W.																																				
	C.																																				
36. Heart disease	W.																																				
	C.																																				
37. Cardio-vascular scleroses.	W.																																				
	C.																																				
38. Cardio-vascular scleroses.	W.																																				
	C.																																				
39. Apoplexy, cerebral	W.																																				
	C.																																				

MONTHLY MORTALITY STATISTICS, PORT OF , MONTH OF , 189 —Continued.

Ages		First to twelfth month.				1 and 2 years.				3 to 5 years.				6 to 10 years.				11 to 15 years.				16 to 20 years.				21 to 40 years.				41 to 60 years.				Over 60 years.				Malarial diseases in detail. (See Directions, par. 1.)
Diseases.	Races.	*a* Natives of city.	*b* Southern sea-border States.	*c* Other States and countries.	*d* Unknown.	*a* Natives of city.	*b* Southern sea-border States.	*c* Other States and countries.	*d* Unknown.	*a* Natives of city.	*b* Southern sea-border States.	*c* Other States and countries.	*d* Unknown.	*a* Natives of city.	*b* Southern sea-border States.	*c* Other States and countries.	*d* Unknown.	*a* Natives of city.	*b* Southern sea-border States.	*c* Other States and countries.	*d* Unknown.	*a* Natives of city.	*b* Southern sea-border States.	*c* Other States and countries.	*d* Unknown.	*a* Natives of city.	*b* Southern sea-border States.	*c* Other States and countries.	*d* Unknown.	*a* Natives of city.	*b* Southern sea-border States.	*c* Other States and countries.	*d* Unknown.	*a* Natives of city.	*b* Southern sea-border States.	*c* Other States and countries.	*d* Unknown.	
40. Paralysis	W.																																					
	C.																																					
41. Cerebral congestion of adults.	W.																																					
	C.																																					
42. Dropsy	W.																																					
	C.																																					
43. Bright's disease	W.																																					
	C.																																					
44. Cancer	W.																																					
	C.																																					
45. Accidents	W.																																					
	C.																																					
46. Unknown	W.																																					
	C.																																					

[Indorsement.]

Form No. 1934*c*.

U. S. Marine-Hospital Service.

Port of..........................

................................, *189* .

MONTHLY MORTALITY STATISTICS

FOR THE

Port of..............................

Month of ...., *189* .

....

.........., *Surgeon, M. H. S.*

DIRECTIONS FOR USING BLANK.

NATIVITY.

Column *a* includes the natives of the city furnishing the report.

Column *b* includes the natives of the zone of occasional yellow fever epidemics, namely: The Southern sea-border States, from Virginia to Texas, Mexico, Central America, Colombia, Venezuela, West Indies, and the western coast of tropical Africa.

Column *c* includes the natives of other States and countries where yellow fever has never occurred, or, if it has, only in the shape of accidental outbreaks.

Column *d*, nativity not given.

DISEASES.

1. Acute malaria.—The deaths given in this line should be repeated in detail in the last column (malarial diseases in detail), under specific headings, e. g., congestive chill, bilious remittent fever, etc.

2. Fevers, unclassified.—The name of the fever should be written, e. g., gastric fever.

8. Other fevers.—The name of the fever should be written, e. g., variola.

14. Pyœmias.—Under this heading should be reported puerperal fever, carbuncle, abscess.

20. Other infections.—The name of the disease should be written, e. g., cholera, glanders, rabies.

21. Acute gastro-enteric affections.—Includes gastritis, enteritis colitis, entero-colitis when not specified as chronic, and other evidently acute diseases, e. g., cholera morbus and cholera infantum.

24 and 25. Liver.—The particular disease of the liver to be written, e. g., cirrhosis, abscess.

37 and 38. Cardio-vascular sclerosis.—The particular manifestation of cardio-vascular sclerosis to be written out, e. g., cerebral softening, aneurism, senile gangrene, angina pectoris.

40. Paralysis.—Includes hemiplegia.

Other diseases not specified.—This includes only such cases as have not been included in the general table. The cause of death should be written, and a stroke, thus, /, made for any death of a white person, and a crossed stroke, thus, ×, for every colored person. The nativity, *a*, *b*, *c*, or *d*, should be written above the stroke and the age below; for instance:

a *b*
Purpura / ×
35 20
c *b*
Locomotor ataxia / ×
42 50

Races.—In the general table of diseases the same signs should be used to distinguish the races; a single stroke, /, for white, and a crossed stroke, ×, for colored, each in the respective spaces above and below the dotted lines.

Experience proves that when the existence of yellow fever is suspected reliance can not be placed upon the reports of physicians, and a house-to-house inspection, therefore, should be made under municipal or State authority.

A knowledge of the existence of the disease having been obtained, the first efforts should be made to confine it to its present locality. Much has been written of the futility of attempting to stamp out yellow fever. In view of the fact, however, that most epidemics have become well-established before being announced and before any steps have been taken to suppress them, the futility of these efforts should not deter us from attempting to check the disease after the presence of a limited number of cases. If, for example, a few cases have been found, and examination of the records shows that in all probability the disease had not previously existed before these cases were discovered, there would be reasonable ground for hope of preventing its further spread by active local quarantine measures. These may be stated briefly as follows, viz: An early house-to-house inspection; the depopulation of the house or infected area, care being taken to disinfect the clothing of exposed persons, the nonimmunes leaving the infected area to be kept under observation, and if possible in a place set aside for this special purpose; house or district quarantine; a thorough disinfection by sulphur fumes and bichloride of mercury of the infected places and their contents. At this time the facts as they exist should be made public, with a view of allowing those who wish to leave the city to do so. Depopulation of the city at the very first appearance of yellow fever, which in all probability will become epidemic, is greatly to be desired, but under restrictions hereinafter mentioned.

In the infected district the cases, if possible, should be concentrated into central hospitals to diminish the number of foci of infection and to insure ease of administration. Tent hospitals, it is believed, furnish sufficient protection.

Experience has shown that nurses should be under close surveillance.

Sanitary guards should be chosen, if possible, from among people whose residence is remote from the epidemic, since they will be less likely to be influenced by considerations of kindred, friendship, or local affiliation.

With regard to railroads, rival roads should be closely watched.

The medical officer in command should confine himself to administrative duties, except under unusual circumstances.

As soon as the disease has become epidemic, consideration for the surrounding country takes precedence over the comfort and commercial interests of those within the infected area; a strong cordon by land and by sea is to be drawn, military in character, and egress from the city thereafter allowed only through a detention camp, where those leaving the city must be forced to undergo a period of probation of ten days to demonstrate their freedom from the disease.

Following are the regulations which were promulgated by the Secretary of the Treasury, August 12, under the act of February 15, 1893, to prevent the spread of yellow fever:

UNITED STATES QUARANTINE RULES TO BE OBSERVED IN PLACES INFECTED WITH YELLOW FEVER.

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
Washington, D. C., August 12, 1893.

To medical officers of the Marine-Hospital Service, quarantine officers in the United States, and others concerned:

Pursuant to the act of February 15, 1893, entitled "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service," the following regulations have been made thereunder and are hereby promulgated according to the terms of the act:

1. All persons affected with yellow fever, or who are believed to have been exposed to the infection, will be isolated under observation until free from infection and all their effects properly disinfected. Communications with infected places will not be allowed except for the necessary conveyance of supplies, etc., which must be under the supervision of a duly qualified medical sanitary inspector.

2. The localities contiguous to those infected, and infected localities, so far as it may be safely done, should be depopulated as rapidly and as completely as possible; persons from noninfected localities, and who have not been exposed, leaving without detention; those who have been exposed, or who come from infected localities, being required to undergo a period of detention of ten days from date of last exposure in camps of probation. The clothing or anything capable of conveying infection shall not be allowed to leave the infected locality without disinfection.

3. Camps of probation shall be inspected twice daily or oftener, and the suspects should be conveniently segregated in groups. A hospital sufficiently isolated shall be provided for each probation camp.

4. When practicable, camps of detention should be provided for those who require it.

5. Buildings in which cases of yellow fever have occurred, and localities believed to be infected, must be disinfected as thoroughly as possible.

6. As soon as the disease shall have been declared epidemic, the railway trains carrying persons who may be allowed to depart from a city or place infected with yellow fever shall be under medical supervision. A medical sanitary inspector should accompany each train when practicable, and enforce prompt isolation of any person who may be attacked with the disease, and report the same immediately to the proper health authorities. When, in the opinion of the proper health authorities, it is necessary, the railroad companies should be required to attach an extra car for hospital purposes to each train carrying persons from an infected place, which may be side tracked at some safe and convenient locality on the road.

CHARLES S. HAMLIN, *Acting Secretary.*

It will be opportune here to read from the more recent regulations which have been prepared in the Marine-Hospital Bureau and promulgated by the Secretary of the Treasury to prevent the spread of certain diseases, viz, cholera, yellow fever, smallpox, typhus fever, leprosy, and plague. The portions of these regulations applying to yellow fever are given here in detail:

ARTICLE II.

NOTIFICATION.

1. State and municipal health officers should immediately notify the Supervising Surgeon-General of the United States Marine-Hospital Service by telegraph or by letter of the existence of any of the above-mentioned quarantinable diseases in their respective States or localities.

ARTICLE III.

GENERAL REGULATIONS.

1. Persons suffering from a quarantinable disease shall be isolated until no longer capable of transmitting the disease to others. Persons exposed to the infection of a quarantinable disease shall be isolated, under observation, for such a period of time as may be necessary to demonstrate their freedom from the disease.

All articles pertaining to such persons liable to convey infection shall be disinfected as hereinafter provided.

2. The apartments occupied by persons suffering from quarantinable disease, and adjoining apartments when deemed infected, together with articles therein, shall be disinfected upon the termination of the disease.

3. Communication shall not be held with the above-named persons and apartments, except under the direction of a duly qualified officer.

4. All cases of quarantinable disease, and all cases suspected of belonging to this class, shall be at once reported by the physician in attendance to the proper authorities.

5. No common carrier shall accept for transportation any person suffering with a quarantinable disease, nor any infected article of clothing, bedding, or personal property.

The body of any person who has died of a quarantinable disease shall not be transported, save in hermetically-sealed coffins, and by the order of the State or local health officer.

ARTICLE IV.

YELLOW FEVER.

In addition to the foregoing regulations the following special provisions are made with regard to the prevention of the introduction and spread of yellow fever:

1. Localities infected with yellow fever, and localities contiguous thereto, should be depopulated as rapidly and as completely as possible, so far as the same can be safely done; persons from noninfected localities, and who have not been exposed to infection, being allowed to leave without detention. Those who have been exposed, or who come from infected localities, shall be required to undergo a period of detention and observation of ten days from the date of last exposure in a camp of probation or other designated place.

Clothing and other articles capable of conveying infection shall not be transported to noninfected localities without disinfection.

2. Persons who have been exposed may be permitted to proceed without detention to localities incapable of becoming infected and whose authorities are willing to receive them and after arrangements have been perfected to the satisfaction of the proper health officer for their detention in said localities for a period of ten days.

3. The suspects who are isolated under the provisions of paragraph 1, Article III, shall be kept free from all possibility of infection.

4. So far as possible, the sick should be removed to a central location for treatment.

5. Buildings in which yellow fever has occurred and localities believed to be infected with said disease must be disinfected as thoroughly as possible.

6. As soon as the disease becomes epidemic the railroad trains carrying persons allowed to depart from a city or place infected with yellow fever shall be under medical supervision.

7. Common carriers from the infected districts, or believed to be carrying persons and effects capable of conveying infection, shall be subject to a sanitary inspection, and such persons and effects shall not be allowed to proceed, except as provided for by paragraph 2.

8. At the close of an epidemic the houses where sickness has occurred and the contents of the same and houses and contents that are presumably infected shall be disinfected as hereinafter prescribed.

ARTICLE V.

DISINFECTION FOR YELLOW FEVER.

1. Apartments infected by occupancy of patients sick with yellow fever shall be disinfected by one or more of the following methods:

(*a*) By thorough washing with an acid solution of bichloride of mercury (bichloride of mercury 1 part, hydrochloric acid 2 parts, water 1,000 parts) or other efficient germicidal agent. If apprehension is felt as to the poisonous effects of the mercury, the surfaces may, after two hours, be washed with clear water.

(*b*) Thorough washing with a 5 per cent solution of pure carbolic acid.

(*c*) By sulphur dioxide, twenty-four to forty-eight hours' exposure, the apartments to be rendered as air-tight as possible.

2. Bedding, wearing apparel, carpets, hangings, and draperies infected with yellow fever shall be disinfected by one of the following methods:

(*a*) By exposure to steam at a temperature of 100° to 102° C. for thirty minutes after such temperature is reached.

(*b*) By boiling for fifteen minutes, all articles to be completely submerged.

(*c*) By thorough saturation in a solution of bichloride of mercury, 1 to 1,000, the articles being allowed to dry before washing.

Articles injured by steam (rubber, leather, containers, etc.), to the disinfection of which steam is inapplicable, shall be disinfected by thoroughly wetting all surfaces with (*a*) a solution of bichloride of mercury, 1 to 800, or (*b*) a 5 per cent solution of carbolic acid, the articles being allowed to dry in the open air prior to being washed with water, or (*c*) by exposure to sulphur fumigation in an apartment air-tight, or as nearly so as possible.

A new feature in the management of an epidemic of yellow fever was demonstrated during the recent epidemic in Brunswick, viz, the stationing of a medical officer in command of the districts outside of the cordon lines and detention camp. The officer in command on the field of action must necessarily be at the center to attend to the guards, to supervise the treatment of the sick, the disinfection of clothing and buildings, and other necessary measures of sanitation. His work may be well supplemented by an officer in command of measures to be taken outside, with the triple object of pursuing and returning any refugee who may have escaped the cordon lines; of investigating rumors, which are always rife, of the spread of the disease in other localities, and taking measures to prevent people from the infected or suspected districts traveling upon the railroads, unless provided with a proper certificate, showing that there is no danger of their carrying infection with them.

I know of no easier way of fully describing the methods to be taken to prevent the spread of yellow fever than by giving a short narrative of the measures which were put into operation in and around Brunswick during the yellow fever epidemic in 1893.

YELLOW FEVER ON SATILLA RIVER AND AT BRUNSWICK IN 1893.

June 15, 1893, the American barkentine *Anita Berwind*, from Havana, arrived at Brunswick (Ga.) Quarantine. She cleared June 19 for Conquest's wharf, on the Satilla River, Georgia, 56 miles from Brunswick, arriving there on the 20th, on the evening of which day the master took to his bed. On June 21 he was moved to Conquest's camp, a cross-tie camp 8 miles distant from the wharf, where he died, June 25, of yellow fever. The vessel was immediately sent to the national quarantine station at Blackbeard Island, and twenty-five stevedores who had been loading her were also sent there for detention and observation. Surg. H. R. Carter was immediately sent to Conquest's camp with authority to employ guards, nurses, and physicians, and, with the voluntary assistance of Dr. W. F. Brunner, took every possible precaution to prevent the spread of the disease, keeping the seventy-three persons in the camp under a close observation, burning and boiling all the possibly infected articles, and disinfecting the house wherein the patient died.

The following are extracts from his reports, dated July 1and 3:

"JULY 1.

"There are seventy-three persons in the camp, living in small houses scattered through the brush. The nurses and others directly exposed are isolated separately, and all others are under surveillance, being inspected twice a day by myself. One man who was directly exposed to contagion ran away before I reached here, but I have, I believe, located him, and have sent the constable after him.

"Dr. Brunner (to whose help I owe much) and I burned and boiled nearly all of the possibly infected articles yesterday, and will finish to-day. I have sent to Brunswick for disinfectants, and I will disinfect the house, etc., when they arrive. The house is open, unoccupied, and under guard. There is considerable difficulty in managing the personnel of the camp, or rather it is a matter of some delicacy, as they frankly said that had they known we were coming they would have run off, and it is only by making it to their interest to stay here that I can hold them.

"I authorized the issue of a ration to the families (eight in number) of the stevedores taken to Sapelo. They were absolutely destitute, and as it was necessary to keep them under surveillance, there was no other way. They were in full communication with the stevedores during the six days of loading. I engaged Dr. McKinnon to inspect them every day. I can not do this, as they are scattered over a radius of about 8 miles, and the nearest one is 10 miles off from here. Any sickness among them will be reported to me.

"Dr. Atkinson will help me here after to-day; he having also been exposed, it seemed well to keep him under surveillance. The probability is that I shall be here about fourteen days if there are no new cases. I confess, however, that I regard it as not at all unlikely that we may have others. Other cases will not materially complicate matters if they occur among those whom I have in close isolation."

"JULY 3.

"No new cases of fever so far. Yesterday I brought back the suspect who had left camp the day before my arrival, as the constable failed to do so. He is now in camp. The disinfectants arrived yesterday, and to-day I am treating the house with sulphur dioxide. It is too open, in spite of calking, to do a very satisfactory disinfection by this means, but I have used the gas in excess threefold. Will use the bichloride solution to-morrow. All fabrics have been burned or boiled, as their condition required.

"I have been hauling lightwood and piling it all over the wood pile and trash heaps in the yard of the house, and I will burn it off this afternoon. I would have done this before, but it was too wet. The object is to burn off all vegetable matter down to the sand, which it will do. I have already burned large fires over the places where the excreta were thrown, keeping them up eight or nine hours. Dr. Brunner left for Savannah yesterday at 4 a. m."

Owing to the thoroughness of the above measures, there was no development of the fever in the camp or at the wharf.

The captain of the *Anita Berwind*, who died at Conquest's camp, was said to have been feeling ill before leaving Brunswick Quarantine, and was known to have visited the city. This led to an inspection of the Brunswick Quarantine by Surgeon Carter, by which it was shown that there was gross violation, not only of the United States Quarantine Regulations, but of ordinary quarantine principles.

Acting upon the information thus received, the National Government took charge of the Brunswick Quarantine under the act of February 15, 1893, and Asst. Surg. J. W. Branham, Marine-Hospital Service, was placed in command.

Dr. Branham took charge of the quarantine July 31, and died August 20. Under a misapprehension of the nature of his disease, he had been removed by the health officer of Brunswick from the quarantine to the city for treatment. From the reports of the medical officers subsequently assigned to duty in Brunswick it appears that there were a number of infected localities in Brunswick at about the same time, and the evidence does not warrant the assumption that Dr. Branham introduced yellow fever into the city.

In Surgeon Murray's report, it is shown that he may possibly have contracted the disease from the ballast pile at the quarantine station, but at the same time the colored laborers engaged in discharging ballast at the quarantine (21 in all) had free access to the city, and it was through them and not through Dr. Branham that the disease was probably introduced and generally disseminated. Dr. Branham was in the city on the 10th of August; in the afternoon returned to quarantine; on his way to the station was seized with a chill, which was followed the next day by a fever; was removed on the 11th to the city, and on the 12th was reported as suffering from yellow fever.

Surg. W. H. H. Hutton was immediately ordered from Norfolk to Brunswick, arriving there on the evening of August 14; and Surg. H. R. Carter, who was at Pensacola, was also ordered there, arriving on the morning of the 15th.

Dr. Branham did not see a single yellow-fever case, nor did he inspect a single infected vessel. It is remarkable that yellow fever prevailed extensively among the colored people, and the assumption that the disease was introduced by the colored ballast laborers, who, after performing their duty in discharging ballast of infected ships, immediately and freely visited the city, is the most probable explanation of the cause of the epidemic.

As will be seen by the reports, vigorous disinfection of the first infected premises, depopulation of limited areas and guarding the same, were carried on with apparently favorable results. August 17, Sanitary Inspector John Guitéras arrived to assist in the preventive measures. On the 8th of September, there having been but three deaths, and fifteen days having expired since the last death, on recommendation of Surgeon Hutton, the report of Sanitary Inspector Guitéras that he had "finished an examination of the cases of fever existing at present and none were suspicious," and the report of P. A. Surg. G. M. Magruder stating that "there seems to be no cause existing for continuing the quarantine," orders were issued to raise the quarantine.

In the meantime all arrangements had been made for the rapid construction of a detention camp at Waynesville, Ga., 25 miles distant, under the direction of Surgeon Hutton, which was completed, ready for occupancy, by September 2. On September 10, Surgeon Hutton was obliged to be relieved on account of physical debility.

On the evening of September 13, two additional deaths from yellow fever were reported by Sanitary Inspector Guitéras, in one of which a certificate of death from consumption had been given. Instructions were immediately telegraphed to employ necessary help for quarantining and disinfecting the infected localities. Passed Assistant Surgeon Geddings arrived, under orders, September 16. Surg. R. D. Murray was ordered from Key West quarantine (Dry Tortugas), arriving there September 18, and reported a strict cordon established. The Postmaster-General was requested to have the mails from Brunswick disinfected. Train inspectors were appointed at Jesup and Waycross. Passed Assistant Surgeon Geddings was ordered to assume command of the detention camp at Waynesville. The railway companies were instructed to sell no tickets south of Atlanta; and on the 16th directions were given to open the camp immediately and make it the only outlet from Brunswick. On the 17th the disease was declared epidemic by the Brunswick board of health. On the 18th, Dr. Paul Von Seydeweitz, of New Orleans, was ordered to Atlanta to consult the railway authorities and to prevent Brunswick refugees from going south. The camp was officially opened September 18, under the immediate command of Passed Assistant Surgeon Geddings, Surgeon Murray being the officer in command of all measures in the infected districts. At that time there were twenty known cases in various portions of the city. In addition to the land cordon, a guard of six men with boats as a day and night patrol was established on the Cumberland River to prevent refugees going to Florida by water. Guards were also stationed with boats at convenient points on the mainland and on the adjacent islands to intercept refugees going north by water, the cordon thus being made complete both on land and on water.

A number of physicians of reputation who had themselves had yellow fever and had experience in treating the disease were immediately sent to Brunswick to assist in the management of the epidemic. The details connected with the management of the epidemic will all be found in the reports of the several officers; but in general it may be stated that Surgeon Murray, with a full corps of accomplished surgeons and an experienced hospital steward, was in command within the city, and that his efforts to prevent the contagion reaching other portions of the country were supplemented by the assistance of the revenue cutters at Beaufort and Savannah carrying medical officers of the Marine-Hospital Service, patrolling the waterways north of Brunswick to inspect the guards stationed therein, and in one instance capturing a boat load of refugees and carrying them to the neighboring national quarantine station at Blackbeard Island to undergo a period of detention.

October 4, Surg. H. R. Carter, who had been temporarily transferred for duty in Washington, was ordered to Waycross with the triple object of inspecting rumors of yellow fever prevailing in various localities to which Brunswick refugees had resorted; to intercept any refugees who might escape through the cordon lines, and to establish a system of train inspection which would permit the railroads to continue traffic without interruption from the sanitary authorities of the various small cities alarmed at the possibility of infected persons coming within their borders.

This service on the outside of the infected area was a new feature in epidemic management and proved very efficacious. It will be seen from Surgeon Carter's report that thirteen places were inspected by him in which it was feared yellow fever existed, and his authoritative statement relieved the communities of the suspicion which rested upon them. Surgeon Carter was assisted by Asst. Surg. J. S. Nydegger and a corps of fifteen sanitary inspectors.

The epidemic was declared at an end November 25. The detention camp was closed November 30. The total number of yellow fever cases in Brunswick during the epidemic was 1,076, with 46 deaths. The disease prevailed at no other locality except Jesup, which, as shown in Surgeon Murray's report, became infected before the disease was declared epidemic in Brunswick.

The following is an extract from the report of P. A. Surg. H. D. Geddings, in charge of the detention camp near Waynesville, Ga.:

"The camp was officially opened for the reception of refugees from Brunswick, Ga., on the 18th of September, 1893, and closed by the order of Surg. R. D. Murray, Marine-Hospital Service, permitting the return of all refugees to their homes in Brunswick, Ga., November 30, 1893. Four hundred and thirty-one persons availed themselves of the privileges of the camp, of whom about 225 were white, and the remainder black and colored. The site of the camp, selected by Surg. W. H. H. Hutton, was 23 miles west of Brunswick, immediately upon and on the south side of the Brunswick and Western Railway, and upon an eminence about 25 feet above the general level of the surrounding country, which is generally swampy, and within a mile of the margin of what is locally known as the Buffalo Swamp. As is usual in this section, the elevation was covered with a dense growth of yellow pine, scrub oak, and black gum trees. The soil was a gray, sandy loam, overlying a stratum of yellow clay, and the natural drainage of the site in all directions was good.

"On my arrival I found that, under direction of Surgeon Hutton, an area 200 feet square had been cleared of trees and undergrowth, and at the four angles of this square rough, but substantial buildings, had been erected, which were used, respectively, as kitchen, white and colored dining rooms, guardroom, quartermaster's storeroom, executive office and telegraph office, and commissary. A depot and baggage room were provided at the railway. Along the line connecting the buildings, at an interval of 20 feet, were placed wall tents, 12 by 14 feet, with flies, and subsequently further rows of tents were pitched behind these, and opening on streets 14 feet wide. All tents were provided with substantial floors, raised 6 inches above the ground, and the following equipment was provided:

"For each inmate—one spring wire bottomed cot, one cotton mattress, one hair pillow, two sheets, one pillow case; and for each tent—two tin washbowls, two tin cups, and two wooden chairs. Remarkable ingenuity was displayed by the inmates in the construction of articles of furniture from packing cases, waste lumber, etc. The tents proved of good quality in service, and quite comfortable in all weather. It is suggested, however, that any further tents be constructed with a wall, 18 inches or 2 feet higher, and of 1 foot greater pitch. A hospital establishment of two buildings was provided at a distance of one-half mile from the camp. The following routine was observed, the calls being given by the bugle: 5.30 a. m., reveille and attendants' breakfast; 6 a. m., breakfast; 8 a. m., sick call; 12 m., dinner; 4 p. m., sick call; 5 p. m., supper; sunset, retreat and call to quarters; 9 p. m., tattoo; 9.15 p. m., taps (extinguish lights).

"The meals were substantial, abundant, and as varied as possible. In all cases women and children were served at the first table, and the races were served in separate dining rooms. The following rules were announced and seemed to work well in practice:

"1. At reveille all inmates will rise and prepare for breakfast.

"2. All quarters must be clean, floors swept, and beds made up before first sick call.

"3. Meals will be served in the dining room only and at stated hours, and no meals shall be carried from the dining room to any quarters, except upon the written order of the medical officer, renewed from day to day.

"4. At sick calls all inmates will repair to their quarters and there be visited and inspected by the medical officer, who will prescribe and advise as he deems best.

"5. All suspicious cases of disease shall be isolated at once, and until such time as their nature may be determined.

"6. All cases of infectious diseases will be treated only in the hospital provided for the purpose.

"7. No baggage from infected localities shall be brought into camp until disinfected by such process as may be directed, and only such wearing apparel as may be deemed absolutely necessary will be brought into camp after the disinfecting process.

"8. All wearing apparel shall be a second time disinfected before discharge from camp.

"9. Any person taken ill between the two sick calls shall notify the nearest guard, who will in turn immediately notify the medical officer.

"10. Guards are enjoined, by their vigilance, to prevent the commission of any nuisance near any quarters; should such nuisance be discovered, the inmates of the nearest quarters will be required to police the same under the supervision of the guard, who will report the fact.

"11. Inmates will confine themselves to the inner lines of the camp after retreat (sunset) call.

"12. While innocent enjoyment will be encouraged, the strictest propriety of conduct will be demanded and enforced.

"The discipline of the camp was, in the main, good throughout. But two confinements for misbehavior were required during the whole duration of the camp.

"All baggage was submitted to steam disinfection upon arrival at, and departure from, the camp. The apparatus used was devised by Surgeon Carter, Marine-Hospital Service, and constructed in a baggage car, the steam being supplied by the locomotive.

"In addition to other duties, nearly 1,600 cars, box and flat, were disinfected for the Brunswick and Western Railway, sulphur fumigation being used for box, and drenching with solution of bichloride of mercury (1–800) for flat cars. This disinfection of cars enabled the traffic into Brunswick to be carried on with a minimum of delay and hardship.

"Two cases of yellow fever occurred among the inmates of the camp; one resulted in recovery, one in death. Both cases occurred in the persons of sailors who had arrived at Brunswick on vessels trading there, and both would seem to show a period of incubation of at least five days, thus justifying our detention of ten days."

Following are the rules for train inspection service enforced by Surgeon Carter:

"Inspectors will allow none to board a train, unless with a certificate, between Waycross and Savannah.

"If certificate can be examined before boarding, without detention of train, it must be done, and if unsatisfactory the person presenting same will not be allowed to board.

"After boarding, the certificate and the person must be carefully examined, and the inspector assure himself that the passenger is not recently from Jesup or any infected locality.

"If the passenger is known to be a recent resident of Jesup or any infected locality, or to have been in such place at any time during the past two weeks, he will not be allowed to board, even if he has a certificate.

"If, after boarding, either the certificate or the examination of passenger is not satisfactory, the passenger will be turned over to the city authorities at Waycross or Savannah, or at the place where he desires to stop, if between those places, and the facts noted and reported.

"A record will be kept of the names of all passengers inspected, name of signer of certificate and his rank, date of inspection, date of certificate, and place of boarding train, and where passenger is bound and what disposition is made of him, whether passed or turned over to local authorities; also any other facts worth notice.

"Inspectors will aid local quarantine authorities in any way in their power consistent with their duties, and give them any information, and obey all local quarantine regulations."

It only remains to be noted that the cost of the measures taken by the Government in and around Brunswick was about $73,000, exclusive of the new quarantine plant.

The Marine-Hospital Bureau has had constructed and now ready for use in any epidemic two portable disinfecting machines—one a sulphur furnace with fan blower and necessary pipes for the disinfection of a portion or the whole interior of a house; the other a steam chamber of sufficient length and width to receive a mattress. Each apparatus is on wheels, and may be readily drawn by two horses, and both are constructed after special designs, including the most recent developments in practical disinfection.

I can not close this paper without commenting upon the sad necessity which occasionally arises in the United States of resorting to the above-described methods of preventing the spread of yellow fever. Unfortunately these measures work a degree of hardship to the people within the infected territory, but on the principle of the greatest good to the greatest number, their enforcement, besides being necessary, is undoubtedly just. The question remains, however, how long have the people of the United States, particularly the southern portion thereof, to be subjected to the possibility of such rigorous measures, and how long must the scourge of yellow fever continue to threaten? Are we to accept this constant menace as a necessary feature of Southern life? Or should we not transfer our energies from the battlefields of epidemics, as it were, and throw them into a campaign against the causes which produce the epidemics?

Now these causes are all practically one, namely, faulty sanitation of cities, a want of sanitary engineering, and the greater the want of sanitation in a given city within the yellow-fever zone the greater is it as a source of danger. Yellow fever is not indigenous in the United States, but the conditions prevailing in many of our Southern seaboard towns and cities are such that, when introduced, it may become nourished, grow strong, and overpower the people. It is incumbent on every State board of health in the South to leave no stone unturned and to work without ceasing until its cities and towns are supplied with perfect sewerage and perfect water supply. In the past yellow fever was a menace to the cities of the North as well as to the cities of the South. Now it gives but little concern on the Atlantic Coast at ports north of Baltimore. Is there any plausible explanation of this other than that the sanitary conditions—in other words, the drainage, the sewerage, the water supply—of cities of the more northern States have been greatly improved? As a preventive, therefore, against the spread of yellow fever, sanitation of Southern cities is of vital importance.

But while we may thus cast the mote out of our own eye, we can not be indifferent to the beam which is in our neighbor's eye. Within 60 miles of our coast of Florida there is an island between which and the United States intimate commercial relations exist. Naturally salubrious, by reason of marked indifference to municipal sanitation, it constantly maintains yellow fever in its harbors and on its shores. I refer of course to the Island of Cuba, and particularly to the port of Havana. Let our Southern cities be ever so perfect in their sanitary arrangements, the danger constantly threatening from Havana and other Cuban ports, from Vera Cruz, from Rio de Janeiro, and other Brazilian ports, would still be great enough to keep us in a state of perpetual alarm. The attention of sanitarians of the United States should be directed to this phase of the yellow-fever situation, and the subject should be constantly agitated until some ameliorating response is received from these neighboring countries.

The following articles, prepared by officers of the Service and embodying the results of their personal experiences during the yellow fever epidemic of 1893 in Brunswick, Ga., are here inserted on account of their practical value:

YELLOW FEVER—SOME REFLECTIONS ON ITS ORIGIN AND METHOD OF SPREAD, ITS THERAPEUTIC TREATMENT AND MANAGEMENT IN EPIDEMIC FORM.

[By H. D. Geddings, Passed Assistant Surgeon, Marine-Hospital Service.]

Probably no disease in the range of medicine has been productive of more literature and so much acrimonious discussion as yellow fever. That this is the case can be easily proved by consulting the catalogue of any large medical library, or by a hasty review of medical periodical literature for the past fifty years.

In view of these statements it might seem that any addition, however small, to this mighty mass of mingled grain and chaff would be useless, superfluous, and capable of fulfilling no good end. An excuse must therefore be sought and framed, and it seems to the writer that a reasonable one is found in the fact that for the past quarter of a century we have gradually grown less familiar with a disease, a dread pestilence, which for over a century had, like Banquo's ghost to the conscience-stricken Macbeth, been annually present to some portion of that part of the seacoast of the United States extending from the Rio Grande on the south to Norfolk, Va., on the north. Nor had long familiarity with the disease diminished its terrors. Year after year we read of its stealthy, unrecognized approach, its insidious spread, its violent outbreak, and then the inevitable result of panic, flight, suffering, and privation, second only, if second at all, to the ravages of the pestilence itself.

Compare the almost annual invasion of the disease in New Orleans, the biennial visitation of Charleston, the epidemics in Mobile, Pensacola, Natchez, Memphis, Cairo, Norfolk, and Philadelphia, with the history of the past decade, during which period but three epidemics, and these of but small proportions, have afflicted the United States.

Again, compare the mortality in the last two of these—about 10 per cent in Jacksonville, Fla., in 1888, and about 6 per cent in Brunswick, Ga., in 1893, with over 50 per cent in Philadelphia in 1820—and I think it will be admitted that the subject holds some interest still. Nor is the cause of this difference in frequency and fatality hard to find. The student of epidemiology and hygiene contrasting the former and present condition of municipal sanitation, the antiquated and barbarous quarantine of simply forty days' detention with the modern enlightened system of maritime sanitation, with from three to five days' detention for purposes of careful observation only, will not find difficulty in deciding why the diminished frequency of invasion, even with a tremendously increased facility and closeness of communication, with known epidemic foci of the disease.

As regards diminished mortality, I have often asked myself of late years whether we have more potent remedial agents than formerly, whether we treat disease more scientifically than the Nestors of medicine who have passed away, or whether, with the passage of years, yellow fever has undergone a reduction in the severity of its type. Interesting though this question be, it must be left to others to solve, and more than likely it will never be settled.

As to the origin of yellow fever, it is hardly necessary to say that at the present epoch previous cases of the disease can alone be regarded as the exciting cause of new outbreaks. Passed is the time when the meteorologist might point to tables of temperature, barometric pressure, dew-point, precipitation, and direction of the wind, and in them, and them only, see the method chosen by Providence for the production of epidemic disease. Passed, forever passed, the day when the local sanitarian or the municipal Dogberry might point with assurance to a given garbage heap as the cause of malaria one week, typhoid the next, and diphtheria or yellow fever at successive periods. Fast passing away is the faction to whom the rising and falling soil water is the fons et origo of all human ills. Granted the axiom that actual cases of yellow fever or fomites of the disease will cause renewed outbreaks, we come logically to the corollary that where yellow fever is, there must have been prior cases or fomites. How, then, can we guard against one or both? The answer comes in unmistakable tones that only by a careful, vigilant, ceaseless, and fearless supervision of commerce with suspected or known infected localities, a rigid and unyielding supervision of pleasure travel, and the intelligent scrutiny and application of acknowledged efficient processes to possibly dangerous merchandise and vessels and their ballast can we hope to avoid a repetition of the sad summers between 1820 and 1876.

With a constantly increasing commercial intercourse, the ports of Cuba, Mexico, Central and South America, are a standing menace to the United States, by reason of the constant risk of the introduction of yellow fever by merchandise and the passengers and crews of vessels and their personal effects. The national, State, and municipal quarantines and maritime sanitation stations in operation in this country have done yeoman service in preventing the introduction of disease by the routes of commerce, but they are few in number, and in some instances doubtful and weak in methods and administration, and the city of Brunswick, Ga., may be cited as an instance of the havoc and ruin wrought by a local quarantine, maladministered until too late by ordinary municipal methods. Dismissing, then, from consideration as untenable any theories of spontaneous generation of yellow fever, let us briefly consider wherein our danger from the disease lies. We are fortunate in that we have one, and one only, possible endemic focus of the disease in the United States, and this a spot fortunately remote, viz, the city of Key West, Fla., situated on an island in the Gulf of Mexico, only 80 miles north of the island of Cuba, with a climate in which the almost tropical sun shines undimmed even by clouds for nearly half of the year, with a temperature never falling to 50° F., and most of the time ranging over 80° F., a city ill built, undrained, and dirty, we have an ideal nidus for the amplification and propagation of yellow-fever poison which may at any time be introduced by persons, personal effects, and merchandise from Havana.

It is asserted by good authority that there is every year between May and November more or less yellow fever in Key West, which either passes unrecognized or is concealed by the Cuban practitioners, who are numerous in the city. It is only fair, however, to add that equally competent observers deny in toto the endemicity of the disease in Key West. The question, while an important one, must still be regarded as sub judice, and a verdict of "not proven" returned. But look abroad. Here we find the city of Havana within eight hours' steaming of Key West, within twenty-four of Tampa, and within four days of Norfolk, Baltimore, Philadelphia, and New York. The city of Havana is notoriously infected, and hopelessly so, and any change or betterment in sanitary conditions would have to be preceded by a political one, which can not enter into our calculations. The city of Vera Cruz, almost equally dangerous, lies perilously near to New Orleans. A constantly increasing commerce, fortunately still largely conducted in slow-sailing vessels, threatens us with danger from Rio de Janeiro and Santos. Thus it will be seen that our danger is no imaginary one, but that we must, if we would be safe, keep ceaseless watch against a foe that is perpetually lurking at our gates.

Of the specific poison of yellow fever we can conjecture much but prove little. No field of scientific research has been more diligently cultivated; none has yielded a smaller harvest. After ten years' labor Sternberg is compelled to announce that the specific cause of yellow fever remains undiscovered. The alleged discoveries of Gibier, Freire, Carmona y Valle, and Finlay have not been proved and have not fulfilled the four crucial conditions laid down by Koch as necessary before a given micro-organism can take rank as the specific cause of a given disease. The writer labored two years with negative results. Knott, of Atlanta, has ably and modestly expounded the theory that yellow fever is due to poisoning by phosphorus, and certainly the symptoms, course, and pathological changes, macroscopic and microscopic, entitle his views to respectful consideration and future careful investigation. Though the discussion of theories is out of place here, the writer, as far back as 1888, while on duty in the Jacksonville epidemic, formulated a theory which still remains in the theoretical stage, but which he hopes to elaborate at some future day. It is in brief this: We know that many micro-organisms in the process of growth evolve chemical products, some of deadly potency. We know that among the ways in which bacterial life may terminate are the exhaustion of nutrient medium and a death by the presence of an excess of their own chemical products. It therefore seems plausible to him that the disease is caused by a poison of bacterial origin, the bacterium causing it perishing in the products of its own growth, and that the victim of yellow fever, when presented to us, is suffering from an acute poisoning by an albumose or toxin which it is quite possible may be a phosphide of an organized base, and that base isomeric with digitalin or alkaloids of some of the heart depressants. Several features in the symptoms, the varying period of incubation and course of typical yellow fever make him hope that in this theory will lie the future solution of the yellow fever problem. But be the specific cause what it may, certain it is that it is subtle; that it possesses considerable vitality under favorable conditions of heat, moisture, and organic matter; that it does not yield so completely to desiccation as the cholera spirillum, but that it yields easily to ordinary germicidal agents in ordinary strength, and that even exposure to sunlight and air and washing in water, sea or fresh, is often efficacious. The disease is not communicable from person to person, and is therefore not contagious in the popular sense of the term, but demands that the locality in which it occurs become infected, which requires time, probably several days, when the locality, bedding, clothing, etc., but not the patient, become dangerous to others. Infected bedding, clothing, etc., stored or packed with others are likely to infect the whole mass, and these being removed to a new habitat, may in a short while infect a locality hitherto healthy and establish a new focus of the disease. This explains the transmission of the disease to points widely distant from the original seat of the outbreak and emphasizes the necessity for proper supervision and efficient disinfection of all articles actually infected or suspected of infection. The disease may thus be conveyed along any line of travel, either by rail or sea, as proved by the outbreaks in Fernandina, Gainesville, and Macclenny, Fla., and Decatur, Ala., in 1888.

The necessity is therefore established for the supervision and regulation of travel from an epidemic or endemic focus and the disinfection of personal effects and prohibition of the shipment of dangerous articles of merchandise from such points.

Prophylaxis against yellow fever in the present state of our knowledge may be summed up in one word, and this is "nonintercourse." Nonintercourse with persons from infected localities until the longest possible period of incubation of the disease be passed, disinfection by steam, bichloride of mercury solution, or sulphur dioxide of all personal baggage from the infected districts, and the prohibition of entrance of all household goods, bedding, etc., will be found effective measures. The inoculation experiments of Freire have deservedly attracted attention, and have, in this country especially, been the subject of much criticism of an adverse nature.

In view of the fact that Gaston, of Atlanta, seems to accept Freire's results as really valuable, and that a medical officer of the Navy has informed the writer that he witnessed some of Freire's experiments and was favorably impressed with the results, it seems that it would be advisable to reopen the inquiry, to lay aside preconceived prejudices, and treat the subject at least with calmness and in a judicial spirit. Granted that Freire's claims to the discovery of the specific micro-organism of yellow fever are not well founded, that the "Cryptococcus xanthegenicus" is a myth due to faulty technique, still it is just possible that he may from the blood of yellow fever patients have obtained sufficient of the protective proteid to effect the results which he claims.

In discussing the therapeutic treatment of yellow fever it is not proposed, indeed it is impossible, to here present any long array of cases with records of temperature and pulse and detailed symptoms of each particular case. It shall be my endeavor to present nothing that has not been of real value in the hands of my colleagues or myself, and anyone taking the trouble to read this and not finding any particular line of treatment laid down will please bear in mind that this is a record, not of what might have been but of what has been done. The writer believes that the treatment of yellow fever, like that of other acute specific febrile diseases, should be symptomatic and directed toward meeting plain and specific indications. The symptoms may be divided, for convenience, into those (*a*) belonging to the onset of the disease and those (*b*) which arise during the course of the illness. Under the first head may be included the chill and subsequent fever, the distressing headache and pain in the back, loins, and limbs. For the relief of these, as well as for properly initiating a systematic treatment, it is believed that the old plan of administering a hot footbath containing mustard is an eminently proper one. The bath hastens reaction from the chill, markedly relieves the headache and pains in the back and legs, and promotes diaphoresis, in this way accomplishing good, and being perfectly incapable of doing any harm. The patient, being then restored to bed, should be covered warmly but not too heavily, and gradually uncovered as diaphoresis proceeds, in order that too great prostration should not ensue. Care of course should be exercised to prevent sudden chilling of the surface. As soon as the patient is made comfortable in bed the remedial treatment should be begun. At this stage this should consist of a sharp purge, preferably mercurial. I have found calomel 0.33 grams, compound powder jalap 0.66 grams, administered in capsules, most efficient. Others prefer the compound cathartic pills, (U. S. P.), of which one, two, or three may be administered, according to the age and general condition of the patient. Should either of these remedies fail to move the bowels freely within six or eight hours it may be followed by a moderate dose of castor oil, a seidlitz powder, or a bottle of citrate of magnesia.

Closely following the first purgative should be administered one of the coal-tar febrifuges, phenacetin 0.50 grams, or antipyrin or antifebrin 0.66 grams, either of which may with advantage be combined with 0.12 grams to 0.18 grams of citrate of caffeine. It will be well to discuss here the effect of the coal-tar series of febrifuges in yellow fever. Possessing as they do analgesic properties of the highest order, being second in this respect only to preparations of opium, in addition to their well-known power of reducing temperatures, they fill a most important place in the treatment of yellow fever. By their use in moderate doses at the inception of the attack we relieve headache and the racking pain in back and limbs, diminish restlessness, and reduce temperature within twelve hours to a point, not normal, but considerably below that at which it stood when reaction from the chill had fully taken place. Indeed, it has seemed to me that the action of the first dose of the antipyretic furnished, in some sort, an index of the course of the particular case under observation. Given a case in which after the administration of the antipyretic the patient passes into an easy sleep and wakes with diminished headache and other pains, a moist skin, and a reduced temperature I feel encouraged to hope, though I do not say, that the case will be mild or of moderate severity and will end in recovery. Given, on the contrary, a case in which the antipyretic produces but slight influence on the temperature, where restlessness is not diminished or controlled, where pain persists, and the skin, though moist, has a burning, pungent feeling, I fear the worst and expect trouble to the very end. Repeated doses of the antipyretic are not needed, or indeed indicated. It is my belief that one, two, or at most three doses in the first twenty-four hours of the disease will accomplish all that is to be gained from this series of remedies. Administered later in the disease, they exercise too depressing an effect on a heart already weakened as a consequence of a toxæmia more or less profound.

The gastric irritability, which is often extreme at the onset of an attack of yellow fever, may be controlled by sinapisms to the epigastrium, abstention from fluids, and frequent ingestion of small pieces of ice, which not only allay thirst, but also tend in themselves to relieve nausea. Should nausea or vomiting persist, the administration of cocaine hydrochlorate, in doses of 0.015 grams to 0.030 grams every hour or two, will often act almost magically. Small quantities of carbonated beverages, as vichy, seltzer, or apollinaris water, ginger ale, or very dry champagne administered ice cold will often prove of service. Creosote has also been highly recommended, and also a mixture containing hydrocyanic acid and morphia. Considerable relief is also derived from the application to the epigastrium of a liniment composed of olive oil and menthol.

On the afternoon of the second or morning of the third day the presence of albumen in the urine may be noted, unless the case be of the most ephemeral mildness. I believe that no case of yellow fever can occur without presenting albuminuria at some time, though that time be limited to a few hours perhaps. It is argued by some that as cases do occur presenting a quantity only recognizable by chemical tests of great delicacy, it is possible that some occur without any. On the other hand, it is argued that a disease so terrible when severe must give some sign, even when very mild. The quantity present on first detection, and its increase or diminution from day to day, form, perhaps, a fairly good guide to prognosis. If it appears, increases gradually, and then begins to diminish, prognosis is good. If, on the contrary, it appears at first in large amount, persists or increases abrubtly, trouble may be anticipated.

The two gravest symptoms that can arise during the course of a case of yellow fever are undoubtedly black vomit and suppression of urine. Black vomit is caused by rupture of walls of capillaries or venous and arterial radicles, and the discharge of blood into the cavity of the stomach, where, coming into contact with hyperacid gastric juice, it becomes altered into small masses of brownish-black color, somewhat resembling coffee grounds in gross appearance. Its advent may also indicate a general hemorrhagic diathesis, which may be manifested by hemorrhages from the nose, gums, fauces, rectum, or by extravasations into the connective tissue of the scrotum. The abrupt appearance of black vomit in large quantities without warning is unusual. Careful search will often show minute brown or black particles floating in clear fluid, and presenting the appearance described by some authors as "bee's or butterfly wings." It is not uncommon, however, that patients just before death should vomit a large quantity of black vomit, and that after death the stomach should be found to contain several quarts of the fluid. It would seem probable that in these cases the hemorrhage which produces it was more of an active hemorrhage than a capillary oozing, and that death comes quickly as the result of shock.

How shall we best treat the condition resulting in black vomit? The problem being both to arrest vomiting and to treat the condition giving rise to it, it follows that treatment should be directed toward the general hemorrhagic diathesis. Probably the most efficient remedy is found in the tincture of the perchloride of iron. That should be given in large doses, 1 to 2 c. c. every hour or two, or if vomiting is frequent, after each act of emesis. Counter irritation to the epigastrium, the administration of stimulants, preferably champagne or good brandy administered in carbonated water and given cold, swallowing of ice and administration of cocaine, make up about the sum of our remedial agents. While enough has been said to show that black vomit is a most serious symptom, it does not follow that every patient who vomits black matter will necessarily die. A fair proportion of cases recover after the symptom has manifested itself. Still the ejection of black vomit makes a most profound mental impression on a patient, and for this reason has often hastened a fatal termination in a case which up to the appearance of this accident had done well. Of far graver importance to my mind are the train of symptoms which lead to uræmia, and which are announced by partial or complete suppression of urine. I believe this to be the gravest accident that can happen in the course of yellow fever. The amount and character of the urinary secretion should be a matter of frequent inquiry in every case, grave, or mildfrom the inception to convalescence. A sudden and irregular increase in the amount of albumen should put us on our guard against possible urinary suppression, and prompt treatment should be instituted and maintained. Counter irritation over the region of the kidneys, with turpentine or mustard, dry cups, the application of hot-water bags, all should be tried. A tisane of watermelon seeds has long enjoyed the reputation of being almost a specific among the Creole population of New Orleans, and I can bear personal testimony to its efficacy alone or given in combination with spirits of nitrous ether. Of almost equal reputation is a tisane of orange leaves, preferably of the bitter variety, given in large quantities and frequently. A remedy much used in Brunswick in 1893, and vaunted as almost specific by those very successful in the management of the disease, was spirits of turpentine, which was sometimes given in heroic quantity; as much as a teaspoonful at a dose and repeated. I can not speak of the remedy from personal experience, but the results claimed for it warrant its more extended use.

A point in the treatment of yellow fever, with the importance of which I am much impressed, is the frequent washing out of the lower bowel with enemata of warm water and soap. Constipation is the rule in yellow fever, and no one who has noted the exceedingly fetid, almost putrid, character of the stools of a yellow fever convalescent can fail to see the wisdom of removing the chances of septic absorption by frequent washing away of this fermenting mass. Pass a well-oiled rectal tube as far up into the bowel as possible, and with a fountain syringe elevated not more than a foot or two, force slowly two or three pints of warm, soapy water into the bowel. The whole operation should be performed with the patient upon a bed-pan, not seated upon a vessel or close stool. The effect upon the temperature and general condition of the patient is most marked.

As to the use of quinia or allied preparations in yellow fever, I concur in the generally accepted verdict that they are without specific effect. But as yellow fever almost always occurs in regions where malarial diseases are also rife, and as the intercurrence of a malarial paroxysm is one of the most disagreeable incidents that can mar the course of a case of yellow fever, I consider it good practice in such regions to administer 2 to 3 grams of quinine or cinchonidia in the first twenty-four hours, exhibiting the drug per rectum if the stomach is irritable.

A most important point in the management of yellow fever is the diet. Many a patient, his crisis past and the borders of convalescence reached, has been hurried into an untimely grave by the misplaced kindness of an apparently simple meal. The yellow fever patient should never be starved; on the contrary, he should be well nourished, but the most scrupulous care should be exercised in the selection and administration of his diet. "A little and that often" should be the rule. For the first few days milk with limewater given cold, then animal broths, concentrated but free of fat should be the regimen. The fever being reduced, soft-boiled eggs, milk toast, and small bits of the white meat of chicken and tenderest of steak may be permitted. Probably at least ten days or two weeks should elapse before the convalescent, by the easiest of stages, should be permitted to resume ordinary diet.

The management of yellow fever in epidemic form involves the problems of the care of those actually stricken with the disease; the supervision of those ill with suspected yellow fever; measures for the prevention of the spread of the disease, and, most difficult of all, the task of regulating the panic-stricken flight of the inhabitants of the infected city in such a way as to involve the least danger to cities, towns, and sections of country chosen as places of refuge. As this paper is largely the result of experience acquired in the epidemics of 1888 and 1893, it will be my endeavor to make no suggestions which have not borne the test of practical application, or been elaborated to meet difficulties which have arisen in the past. The subject will further be considered only from a service point of view, i. e., from a time when the national authority, under the provisions of the act of February 15, 1893, has been invoked to handle an epidemic which is beyond the control of municipal or State authorities, and which endangers the well-being of surrounding cities and States. Therefore the first question to be considered in logical order is the regulation of the flight of the panic-stricken to places of safety. To the student of epidemiology there is a melancholy sameness in the early history of all yellow-fever epidemics. They begin with the occurrence, usually in the early spring, of cases of a disease which differs in course and responsiveness to treatment from the diseases usually prevailing in the particular locality at that season of the year. More cases follow, probably in widely scattered localities, but all, on subsequent investigation, traceable to the one original source. Then follows the period of doubt, then the period of suppression for commercial reasons; then the honest announcement of a conscientious local physician of the nature of the disease, the demand for the "yellow-fever expert," and his bitter denunciation by press and public, and doubt becomes certainty, and then follows panic, wild and unreasoning, and then flight. City after city closes its gates against the fleeing unfortunates, and women and children are hustled from place to place seeking shelter and food, and in many smaller places being confronted by a shotgun in the hands of a thoroughly aroused and scarcely less terror-stricken native. How is this deplorable feature of all epidemics to be avoided? The answer is found in the establishment of camps of detention or probation, which, while not a very modern idea, first found practical, successful exemplification at Camp Perry, Fla., in 1888. The practical outcome of that camp is to be found in the Annual Report of the Supervising Surgeon-General, Marine-Hospital Service, for that year, and that of Camp Detention in Annual Report of 1893. The theory of these camps is in brief that here, under good hygienic surroundings and competent medical supervision, fugitives from yellow fever may pass a period exceeding the duration of the period of incubation of the disease, and then with disinfected baggage, and provided with a certificate setting forth the fact of detention, observation, and disinfection, proceed in safety to any city or place recognizing the value and validity of such certificates.

In 1893 the eminent sanitarian at the head of the Alabama State board of health was the only one who refused to honor these certificates. The unreasonable nature of his scruples is proved by a search of the records. Out of the 1,200 passed through Camp Perry in 1888 and the 430 passed through Camp Detention in 1893 he is challenged to find, if he can, one single case of yellow fever developed in any person after discharge from either camp. It being unnecessary to dwell upon the construction, management, and description of such camps in this article, the question arises how long such camps should be maintained as camps of probation. It strikes me most forcibly that the plan heretofore pursued of maintaining them during the whole existence of the epidemic is wrong in theory and injurious in practice. In my opinion, it would be better and productive of more satisfactory results if, upon opening the camp of detention, it were announced that the duration of the camp would be from thirty to forty-five days, and that after that time those remaining in the infected city must there remain until the epidemic ceases. While it is probable that a city can not be emptied entirely by any method short of the suspension of the civil and establishment of military procedure, it is believed that this method would go far toward causing an exodus of all financially able to move, would diminish the amount of material on which the disease might prey, with a corresponding diminution of scattered foci of infection, and give better opportunity for the exercise of repressive measures. Once out, there should be absolutely no method of return to the infected city, save documentary evidence of undoubted authenticity, and from a reputable source, of immunity from the disease by reason of a previous attack. All communication with the infected center should be absolutely cut off, save that for the carrying of the actually necessary food and medical supplies and the mails. If for no other reason, passage into the infected city should be prohibited as tending to diminish popular belief in the impassability of the guard line. Human nature is prone to self-glorification, and instances have been noted of individuals to whom was granted written permission to pass within the guard line afterwards relating purely fictitious histories of their skillful evasion of the vigilance of guards. Every possible avenue of escape or entrance by land or water should be closely guarded, and it is a serious question if better results and more effective vigilance would not be obtained by securing the services as guards of persons remote from the epidemic center, as being less likely to be influenced by considerations of kinship, friendship, or local affiliation.

Railroads and other lines of travel should be most closely scrutinized, for it is notorious that given two competing lines of railroad, one will scrupulously observe all quarantine regulations, while the other will evade them, and thus profit by the conscientiousness of its rival. To summarize: The stricken city should be put into a condition as closely resembling a state of siege as is consistent with the resemblance of the merciless errand of war to the mild and gentle errand of sanitary science.

Having thus provided for the safety and comfort of those fleeing from danger, and the safety of those to whom they may flee, it remains to consider the methods to be pursued in the management of the epidemic itself, and upon the field of its full activity. Here the first essential is a most active, vigilant, and inflexible administrative head, and I maintain that he can accomplish the most good by confining himself closely to his administrative duties and leaving professional work to his assistants, for did he possess the powers of a Cæsar, contingencies would arise that would try them all. His must be the head to plan, and the firm hand to direct.

I believe that it goes without saying that the more the epidemic can be concentrated into a small area, the easier it will be handled and the shorter will be its duration. Therefore it seems to follow naturally that if all cases as they develop could be removed to central points (large hospital establishments) foci of infection would be dimished in number, and ease of administration and observation secured.

To at once remove a patient to hospital, disinfecting immediately the room from which he had been removed, together with its contents, and then keep the persons by whom he had been surrounded under observation as suspects, would, to my mind, be an ideal method of procedure. It will be objected that in the case of large families this might require more than one disinfection to meet probably successive cases. I maintain that 6, 8, or 10 disinfections would be cheaper in money, and effect more than allowing one more dangerous center to become established. Again it will be objected that a certain number of cases will be concealed, and that removal to hospital will be injurious to patients. I maintain that a house-to-house inspection made sufficiently often will reduce the first to a minimum, and that cases of yellow fever in the early stages bear removal with remarkable safety. Here, too, the ordinary principles of humanity and professional care and prudence must govern. Again it will be urged that this plan would necessitate the erection of large and necessarily expensive buildings, which would take time to erect and which would be not only useless but dangerous when the epidemic was ended. I will endeavor to prove to the contrary by showing briefly how a most excellent, commodious, and quickly erected hospital, or ward of a general establishment, can be erected, the requirements being three United States army-hospital tents, 14 by 16 feet, with their flies, and sufficient lumber to construct floors and frames. A floor 48 feet in length, and the width of a tent, is laid on stringers placed transversely. Studs equal in height to a tent wall are then cut and spaced along the long side of the floor, seven on each side, and securely toe-nailed to the floor and secured to a plate nailed along the tops. Seven sets of rafters are then cut, corresponding to the pitch of the tent roof, and placed in position, using an inch plank as a ridge pole. The rafters are then secured by a few short braces secured transversely across the angles. Over this frame the tent is stretched and secured by battens and galvanized nails. The fly is then stretched as usual and then secured either to pegs or a light framework by its own guys. There is thus constructed a ward, weather tight, well ventilated, and which by means of the flaps of the tents can be thrown into one or separated into three compartments. Such a ward can be multiplied indefinitely, will accommodate twelve to sixteen patients, and can be administered with two nurses. It is, of course, to be remembered that the opposition of patients to treatment in hospitals is sometimes extreme. In such cases a campaign of education must be entered into to prove to such individuals that the attention received and results attained in hospitals fully equal those attained in their own homes. The employment of nurses in yellow fever epidemics is a most vital and pertinent question. Immunity against the disease is of course a most important consideration in a yellow-fever nurse, but unfortunately the mental and moral character of the average volunteer nurse is far from satisfactory. A yellow fever epidemic bears a strong similitude to a boiling pot; all impurities in a community are brought to the surface. The hospital plan of treatment would have the advantage that nurses would be kept under better surveillance, and much incompetency, drunkenness, and consequent neglect and suffering of patients might be avoided. It seems to the writer that an organized association of yellow-fever nurses with branches in all Gulf and South Atlantic cities, admission to which could only be had on presenting proofs of immunity, sobriety, and efficiency from reputable physicians, would fill a want and furnish a body of experienced helpers to move to the site of an epidemic on call and in such numbers as might be required.

A most important point is the disinfection of dwellings where cases of yellow fever have occurred. A specially constructed portable steam disinfecting apparatus will render this process much more rapid and efficient, at a cost which will seem small in comparison with the results achieved. Articles of wearing apparel, bedding, hangings, curtains, etc., should be disinfected by steam at 102° C. for at least thirty minutes. Articles injured by steam should be immersed in solution of mercuric chloride 1-1000 or solution of pure carbolic acid 1–20. Rooms should have their floors and woodwork scrubbed with the mercuric chloride solution; the walls, if papered, stripped and washed and repapered, or, after scrubbing with soap and water, the whole apartment should be subjected to fumigation with sulphur dioxide, 10 per cent in volume, with twelve hours exposure, the room being previously rendered as air-tight as possible. To attain this percentage of gas the sulphur must be burned in a special furnace, and the product forced in by a blast. Probably the most convenient plan would be to use liquefied sulphur dioxide, rendered gaseous by release from pressure, the gas being conducted into the apartment by means of a hose or lead pipe. It is suggested that a special epidemic train might with advantage be equipped and kept in readiness for emergencies. This train should be composed of a car carrying an approved form of steam chamber and possibly a sulphur furnace, cars loaded with tents, cooking apparatus, and camp equipage, and a tank car for the transportation of water for use of the disinfecting apparatus. Steam could be furnished by a locomotive hired for the purpose, or could be generated in a boiler erected upon another car.

TABLES SHOWING THE RESULTS OF OBSERVATIONS WITH REGARD TO REMITTENT AND YELLOW FEVERS, TAKEN DURING THE YELLOW FEVER EPIDEMIC OF 1893, IN BRUNSWICK, GA.

[By A. R. Booth, Acting Assistant Surgeon, Marine-Hospital Service.]

NOTE.—These tables relate to the patients treated individually by Dr. Booth.

TABLE NO. 1.

YELLOW FEVER.

Whites:	
Males	3
Females	7
Total whites	10
Colored:	
Males	58
Females	89
Total colored	147
Total whites and colored	157

MALARIAL FEVER, REMITTENT.

Males	39
Females	29
Total	68
Whites	0
Colored	68
Total	68

OTHER DISEASES.

Diseases of the respiratory system	2
Diseases of the digestive system	3
Malarial fever, intermittent	31
Other diseases	11
Total	47

SUMMARY OF ALL CASES.

Yellow fever	157
Malarial fever:	
Remittent	68
Intermittent	31
Diseases of the respiratory system	2
Diseases of the digestive system	3
All other diseases	11
Total	272

TABLE NO. 2.—YELLOW FEVER CASES.

[Giving ages, sex, and color and the number of cases occurring in each period of five years.]

Ages in groups of five years.	Whites.					Colored.					Per cent, both white and colored.
	Number of males.	Number of females.	Per cent of males.	Per cent of females.	Per cent, both males and females.	Number of males.	Number of females.	Per cent of males.	Per cent of females.	Per cent, both males and females.	
Under 5	......	1	......	14.29	10	7	3	12.11	3.39	6.80	7.04
5 to 10	......	1	......	14.29	10	8	8	13.84	9.04	10.88	10.88
10 to 15	......	......	......	......	......	2	9	3.46	10.17	7.48	7.04
15 to 20	1	1	33.33	14.29	20	7	11	12.11	12.43	12.24	12.30
20 to 25	......	1	......	14.29	10	8	18	13.84	20.34	17.68	17.28
25 to 30	......	......	......	......	......	13	16	22.49	18.08	19.72	18.56
30 to 35	1	1	33.33	14.29	20	2	9	3.46	10.17	7.48	8.32
35 to 40	......	2	......	28.57	20	5	10	8.65	11.30	10.20	10.88
40 to 45	......	......	......	......	......	3	1	5.19	1.13	2.72	2.56
45 to 50	1	......	33.33	......	10	1	2	1.73	2.26	2.04	2.56
50 to 55	......	......	......	......	......	......	......	......	......	......	......
55 to 60	......	......	......	......	......	1	......	1.73	......	.68	.64
60 to 65	......	......	......	......	......	......	2	......	2.26	1.36	1.28
65 to 70	......	......	......	......	......	......	......	......	......	......	......
70 to 75	......	......	......	......	......	......	......	......	......	......	......
75 to 80	......	......	......	......	......	1	......	1.73	......	.68	.64

TABLE NO. 3.—MALARIAL FEVER, REMITTENT.

[Giving the ages, in periods of five years, the sex, and the number of each, together with the per cent, by sex, to the total number of each sex, and the per cent of both to the total number of cases.]

Ages in 5-year periods.	Number of males.	Number of females.	Total.	Per cent of males.	Per cent of females.	Per cent of both to total number of cases.
Under 5	......	......	......	......	......	......
5 to 10	4	......	4	10.260	......	5.88
10 to 15	4	5	9	10.260	17.25	13.23
15 to 20	8	5	13	20.520	17.25	19.11
20 to 25	3	8	11	7.695	27.60	16.17
25 to 30	7	8	15	17.955	27.60	22.05
30 to 35	3	......	3	7.695	......	4.41
35 to 40	3	3	6	7.695	10.35	8.82
40 to 45	4	......	4	10.260	......	5.88
45 to 50	3	......	3	7.695	......	4.41

TABLE NO. 4.—YELLOW FEVER CASES.

[Showing the maximum temperature reached, the number of cases reaching same, by sex and color, the per cent of each for each sex and color, and the per cent of each group to the total number of cases.]

Temperature in degrees Fahrenheit.	Whites.					Colored.					Per cent of white and colored cases.
	Number.		Per cent by sex.		Per cent of cases.	Number.		Per cent by sex.		Per cent of cases.	
	Males.	Females.	Males.	Females.		Males.	Females.	Males.	Females.		
105.2	......	......	......	......	......	......	1	......	1.13	.685	.64
105	......	......	......	......	......	5	4	8.60	4.49	6.165	5.76
104.4	......	1	......	14.29	10	1	3	1.72	3.39	2.740	3.20
104.3	......	......	......	......	......	......	2	......	2.26	1.370	1.28
104.2	......	......	......	......	......	1	1	1.72	1.13	1.370	1.28
104.1	......	......	......	......	......	2	6	3.45	6.74	5.400	5.12
104	2	2	66.66	28.58	40	17	19	29.24	21.47	24.660	25.60
103.4	......	4	......	57.16	40	10	19	17.24	21.47	19.805	21.12
103.3	1	......	33.33	......	10	7	6	12.09	6.74	8.905	8.96
103.2	......	......	......	......	......	1	7	1.72	7.91	5.400	5.12
103.1	......	......	......	......	......	2	4	3.45	4.49	4.110	3.84
103	......	......	......	......	......	5	6	8.60	6.74	7.535	7.04
102.4	......	......	......	......	......	......	4	......	4.49	2.740	2.56
102.3	......	......	......	......	......	1	1	1.72	1.13	1.370	1.28
102.2	......	......	......	......	......	1	2	1.72	2.26	2.055	1.92
102	......	......	......	......	......	......	1	......	1.13	.685	.64
101.2	......	......	......	......	......	1	......	1.72	......	.685	.64
101.1	......	......	......	......	......	......	2	......	2.26	1.370	1.28
101	......	......	......	......	......	1	......	1.72	......	.685	.64
100.4	......	......	......	......	......	1	......	1.72	......	.685	.64
100	......	......	......	......	......	1	......	1.72	......	.685	.64
99.4	......	......	......	......	......	1	......	1.72	......	.685	.64
99	......	......	......	......	......	......	1	......	1.13	.685	.64

TABLE NO. 5.—MALARIAL FEVER, REMITTENT.

[The highest point of temperature reached, the number of cases attaining same, their sex, and the per cent of cases in each group of each sex, and the per cent of each to the whole number of cases.]

Temperature in degrees Fahrenheit.	Number of cases.		Total males and females.	Per cent of each.		Per cent of both to whole number.
	Males.	Females.		Males.	Females.	
105.2	....	1	1	....	3.45	1.47
105	1	1	2	2.56	3.45	2.94
104.4	3	4	7	7.69	13.80	10.29
104.3	1	1	2	2.56	3.45	2.94
104.2	2	2	4	5.13	6.90	5.68
104.1	6	4	10	15.39	13.80	14.71
104	14	7	21	35.90	24.14	30.88
103.4	12	5	17	30.77	17.24	25
103.3	....	2	2	....	6.90	2.94
103.2	....	....	....	....	....	....
103.1	....	....	....	....	....	....
103	....	2	2	....	6.90	2.94

TABLE NO. 6.—YELLOW FEVER, MAXIMUM AND MINIMUM PULSE.

[Exhibiting the maximum and minimum pulse in groups of cases having same change.]

Pulse.	Whites.				Colored.				Total per cent of white and colored.
	Number of males.	Per cent of males.	Number of females.	Per cent of females.	Number of males.	Per cent of males.	Number of females.	Per cent of females.	
130 to 80					2	3.45	1	1.12	1.91
130 to 75					1	1.72	3	3.37	2.55
130 to 70					2	3.45	5	5.62	4.46
130 to 65							2	2.25	1.27
130 to 60							1	1.12	.64
130 to 38							1	1.12	.64
125 to 75							1	1.12	.64
125 to 70					1	1.72	3	3.37	2.55
125 to 65							1	1.12	.64
125 to 60							1	1.12	.64
125 to 55					1	1.72			.64
120 to 90					1	1.72			.64
120 to 80					2	3.45	1	1.12	1.91
120 to 75			1	14.29	4	6.90	11	12.35	10.20
120 to 70	1	33.33	4	57.16	16	27.52	20	22.47	26.12
120 to 65	1	33.34			2	3.45	5	5.62	5.10
120 to 60					5	8.62	5	5.62	6.37
120 to 55							1	1.12	.64
120 to 50					1	1.72	1	1.12	1.27
115 to 85					1	1.72			.64
115 to 80							1	1.12	.64
115 to 70			1	14.29	3	5.17	8	8.99	7.64
115 to 65			1	14.29	1	1.72	2	2.25	2.55
115 to 60					2	3.45	1	1.12	1.91
110 to 75							1	1.12	.64
110 to 70					3	5.17	5	5.62	5.10
110 to 65					1	1.72	1	1.12	1.27
110 to 60	1	33.33			1	1.72	2	2.25	2.55
110 to 50							1	1.12	.64
105 to 75					1	1.72			.64
105 to 70					2	3.45			1.27
100 to 80					1	1.72			.64
100 to 75							1	1.12	.64
100 to 70					1	1.72	1	1.12	1.27
90 to 70					2	3.45	1	1.12	1.91
75 to 65							1	1.12	.64
60 to 45					1	1.72			.64

TABLE NO. 7.—MALARIAL FEVER, REMITTENT.

[Exhibits the maximum and the minimum pulse, the number of cases reaching like extremes, the per cent of each as to sex, and the whole number of cases. No whites; color black.]

Pulse, maximum and minimum, by fives.	Number.			Per cent, maximum and minimum, by sex.		Per cent to total cases.		Per cent both as to all cases.
	Males.	Females.	Total.	Males.	Females.	Males.	Females.	
160 to 95	1		1	.256		.147		.148
150 to 95	2	1	3	.514	.345	.294	.235	.444
150 to 85		1	1		.345		.235	.148
150 to 80	5	2	7	1.280	.690	.735	.470	1.036
150 to 70	4	1	5	1.024	.345	.588	.235	.740
145 to 85		1	1		.345		.235	.235
145 to 80	6	1	7	1.536	.345	.882	.235	1.036
145 to 70	1	1	2	.256	.345	.147	.235	.296
140 to 90	1		1	.256		.147		.148
140 to 85	1		1	.256		.147		.148
140 to 80	7	5	12	1.792	1.725	1.029	1.175	1.776
140 to 75	3	1	4	.768	.345	.441	.235	.592
140 to 70	2	2	4	.512	.690	.294	.470	.592
135 to 80	1	2	3	.256	.690	.147	.470	.444
135 to 75	1	1	2	.256	.345	.147	.235	.296
135 to 70	2	3	5	.512	1.035	.294	.705	.740
130 to 80	2	2	4	.512	.690	.294	.470	.592
130 to 75		2	2		.690		.470	.296
130 to 70		3	3		1.035		.705	.444

TABLE No. 8.—YELLOW FEVER CASES.

[Giving the hour at which the chill or rigor occurred.]

Hour.	Whites.				Colored.				Per cent of white and colored.
	Number of males.	Number of females.	Per cent of males.	Per cent of females.	Number of males.	Number of females.	Per cent of males.	Per cent of females.	
Day.									
6 a. m						1		7.69	4.55
7 a. m						2		15.38	9.10
8 a. m					1	1	20	7.69	9.10
9 a. m					3	1	60	7.69	18.20
10 a. m									
11 a. m									
12 m						1		7.69	4.55
1 p. m	1	1	50	50		1		7.69	13.65
2 p. m									
3 p. m					1		20		4.55
4 p. m	1		50						4.55
5 p. m		1		50		2		15.38	13.65
6 p. m						1		7.69	4.55
7 p. m						3		23.07	13.65
8 p. m					1	3	1.89	3.96	2.96
9 p. m		1		20	9	9	17.01	11.88	14.06
10 p. m					1	4	1.89	5.28	3.70
11 p. m		1		20	8	8	15.12	10.56	12.58
12 p. m		1		20		1		1.32	1.48
1 a. m		1		20	8	14	15.12	18.48	17.02
2 a. m					9	13	17.01	17.16	16.28
3 a. m					6	13	11.34	13.20	11.84
4 a. m		1		20	7	11	13.23	14.52	14.06
5 a. m	1		100		4	3	7.56	3.96	5.92

TABLE No. 9.—MALARIAL FEVER, REMITTENT.

[Giving the hour at which the chill or rigor occurred.]

Hour of chill.	Number of males.	Number of females.	Total.	Per cent of males.	Per cent of females.	Total per cent of both.
6 a. m		2	2		6.90	2.94
7 a. m	4	3	7	10.26	10.35	10.29
8 a. m	4	2	6	10.26	6.90	8.82
9 a. m	7	2	9	17.95	6.90	13.23
10 a. m	1		1	2.56		1.47
11 a. m	4	4	8	10.26	13.80	11.76
12 m		1	1		3.45	1.47
1 p. m	3	3	6	7.69	10.35	8.82
2 p. m	3	2	5	7.69	6.90	7.35
3 p. m						
4 p. m	1	2	3	2.56	6.90	4.41
5 p. m		2	2		6.90	2.94
6 p. m						
7 p. m	1	1	2	2.56	3.45	2.94
8 p. m	2	1	3	5.13	3.45	4.41
9 p. m	3	2	5	7.69	6.90	7.35
10 p. m						
11 p. m	2		2	5.13		2.94
12 p. m						
1 a. m		1	1		3.45	1.47
2 a. m						
3 a. m	1		1	2.56		1.47
4 a. m						
5 a. m	3	1	4	7.69	3.45	5.88

Some Observations on Yellow Fever in Brunswick, Ga., in 1893.

[By C. Faget, M. D., Sanitary Inspector, Marine-Hospital Service.]

These observations answer several questions of interest to the physicians of the South as to the mildness of this last epidemic, the treatment pursued, the efficacy of the tincture muriate of iron and of antipyrin, as to nonalbuminuric yellow fever, as to the prevalence of the fever among the negroes, the prevalence of malarial fever, and the complications of malarial with yellow fever.

It is my conviction that there were considerably more cases of yellow fever among the negroes than were reported, especially in the beginning of the epidemic, when the presence of yellow fever was denied by many, and it was impolitic to declare cases without sufficient evidence to sustain the diagnosis. Before the arrival of Drs. Wall and Booth, the two colored physicians of Brunswick saw about fifty cases a day that were not reported. I saw some of these cases, and from the argument of epidemic coincidence I am persuaded they were yellow fever cases. Two, three, or four colored people would be taken sick at the same time in the same house, having, as a rule, one day of fever, sometimes two or three, without any differential diagnostic signs. I examined the urine for albumen (layer test) in many cases and failed to find any. It might be objected that I did not examine the urine of a given patient every day. I did so with that object in view. Were they light cases without albumen in the urine? I do not doubt the importance of this diagnostic sign, but I am sure that it is absent in some of the mild cases. As a rule it is not sought for in these cases, especially among negroes. It is especially in severe cases that it is looked for as a guide to the prognosis. Apart from the ground of epidemic coincidence, I saw genuine cases of yellow fever among the negroes; the case of Birl Edwards, who died under my observation with all the symptoms of yellow fever, the low pulse, and the urine loaded with albumen; I will cite also No. 64, Albert Harper, and Nos. 73 and 119, who had the diagnostic low pulse. For the more severe epidemic of 1878 I have a great number of notes of characteristic yellow fever among the negroes.

As to the opinion which prevailed that the negroes were not subject to yellow fever before the war, the explanation of the present apparent change in this respect is that the almost yearly visitations of yellow fever in the South before the war made them immune from infancy, while at present sixteen years have elapsed since the prevalence of a widespread epidemic, and that due, evidently, to better systems of quarantine. This explanation holds good for the traditional immunity of the New Orleans born, as it is still the traditional fact for the natives of Havana and Vera Cruz.

As a rule, babies or very young children have it so lightly that it may pass unnoticed, but sometimes they are stricken down, dying in convulsions in a day or two, and the true diagnosis is not ascertained.

The influx of the country negroes into the towns must also have been more restricted before the war, and in presence of a dangerous epidemic among the whites the few light cases among them passed unnoticed.

That they have a lighter form of yellow fever than the whites is evident, and, by-the-by, could not an antitoxine be found in a negro lad convalescing from a true attenuated form of yellow fever to cause a light case in the white, as in the case of the inoculation of smallpox?

It is my opinion that most negroes who died during the epidemics of yellow fever died of complications, generally malarial, or through bad treatment, starvation, and purging. I am certain I have saved many through proper feeding. During this epidemic I saw two cases of severe dysentery following the fever and a case of suppression of urine for forty-eight hours in a negro woman who recovered. I witnessed about ten autopsies performed by Surgeon Murray, and in my opinion all those I witnessed bore evidences of yellow fever. One was a Chinaman. Everything was characteristic of yellow fever for the whites also, with the exception of one or two, perhaps, which were complicated with malaria; for the negroes, in about four or five there were evidences of malarial complications. In one case the liver was as dark as possible, without any patch of yellow, the spleen was enlarged and friable, but the stomach and intestines were congested and the kidneys were blood red and as highly congested as I ever saw them. The urine contained albumen without a doubt. That was the opinion of all the physicians present. I believe there were more malarial complications before, during, and after an attack of yellow fever during this epidemic than I ever saw before. The course of the fever is not as typical on that account in many cases as I have seen it in the 213 observations I took in 1878 in Vicksburg. I am persuaded that an acid or a certain proportion of acids in the urine would be found in yellow fever of great value for diagnostic purposes. It is left to a practical chemist to find a chemical test for that acid. I owe to the kindness of Professor Bonchart, of Paris, the following note: "Shultzen has found in the urine of phosphorus poisoning and in the urine of acute atrophy of the liver a body isomeric to sarcolactic acid, which is apparently the aldehyde of glycerine. It is well to make the remark that Wislicenus states that sarcolactic acid is nothing else than paralactic acid with a very small quantity of lactic acid of fermentation." Has the sugar test been applied in yellow fever?

Treatment.—About the practical treatment, the first thing in order, the first indication, is to relieve the general and intense pains in the head, back, and limbs, and to abate the fever or prevent its rising too high. We have now a splendid remedy in antipyrin or in exalgine. Phenacetin, in my opinion, is not as efficacious, and antifebrin requires too much caution. However, this is a matter of personal experience. It was my great desideratum in 1878 to have something to lower the temperature better than cold-water affusions. I have given antipyrin in 10-grain doses every three or four hours extensively, and I have yet to see any bad effect I could ascribe to it. As high temperatures in yellow fever generally indicate bad cases, I believe that by keeping the temperature down a case can be rendered light which otherwise would have been severe. It succeeds admirably to relieve the pains. I also prescribe a liniment for that purpose: Chloral and camphor, of each 1 ounce, with 15 grains of atropine. It is not dangerous and certainly effective. Then a light purge of magnesia (Husband's), one to two teaspoonfuls, to be continued in lighter doses, in milk, every day; and, if the bowels are sufficiently open—one passage a day—bicarbonate of soda, with the object of counteracting the acidities of the stomach and of the secretions generally. The careful feeding of the patient is most important—milk in abundance; broth without grease, two or three times a day; and soft-boiled eggs, two to six a day· some stimulants only in the stage of depression; the elixir Ducrò, a French preparation of meat juice and good brandy that is well borne by the stomach; champagne when the prostration becomes alarming. But beware of exciting acidities in the stomach and determining thereby the oozing of blood (black vomit). During the latter part of the epidemic of 1878, during that of 1888 in Florida, and during this last, I have given to all my cases the tincture of chloride of iron, 10 to 20 minims, in glycerine and sirup every four hours, and in threatened black vomit 40 minims with the best results, I believe, as an hemostatic antiseptic and blood reconstituent. After the epidemic of Florida in 1888, I met Doctor Llenas at Puerto Plata (Santo Domingo). He was enthusiastic about the treatment of yellow fever with the perchloride of iron, which he gives in 20 to 40 drops during the day (much higher doses than mine). He gives also sulphuric lemonade, 10 grains of quinine every morning; 30 grains of bromide of potassium at night; occasionally citrate of of magnesia, and nothing more than 3 cups of broth a day. He wrote a paper on this treatment by the perchloride of iron to the Medical Society of Nantes (France), in 1886. He says the result of this treatment is marvelous in comparison with others, and yellow fever is certainly more severe in the West Indies than in the United States.

I will cite cases Nos. 1, 11, 14, 41, 95, 96, 102, and 114, where the tincture of iron stopped the black vomit or hæmatemesis and saved the patients. The six fatal cases it was my bad luck to have, Nos. 15, 21, 27, 28, 29, and 112, did not take the remedy on account of their being too delirious from the start. Two or three took an occasional dose in the first day or two, but not enough to have any effect. I also believe it is the remedy in diphtheria, locally and internally.

I would like to try the treatment by olive oil as the Spanish physicians use it. I believe it would allay the acidities of the alimentary canal, as it does in acid dyspepsia, the irritability and congestion of its mucous membranes, and might have a good effect on the portal circulation of the liver, relieving the intense congestion of the portal system. But what is of most importance is an abundance of liquids, water and milk, with a small piece of ice, to promote diuresis and the excretions generally.

I attended more than 130 cases during this epidemic. I kept a record of 123. For yellow fever, 115 cases—68 whites and 47 colored; 6 deaths—4 whites and 2 colored (one a mulatto, the other a negro). Eight cases of malaria recorded—5 whites and 3 colored. I have seen many more that were not recorded. The case of Mrs. Perrin, who had been attended by two physicians, was transferred to me when she was moribund.

Before closing this report I would like to suggest, should a like occasion arise of an epidemic in a small town without adequate hospital accommodations, that a temporary hospital, or more than one, be at once established—hospital tents and small houses—as at Camp Perry and at the detention camp, near Waynesville; with a physician in charge, who would make it his headquarters, with good nurses and necessary accommodations. More patients could be properly attended than when distributed throughout the town. Such a hospital was a sad need in Brunswick.

I would also like to see liquid ammonia used for disinfecting material in box cars or in houses. Its freezing and germicidal properties, I believe, would be better adapted to the peculiar germ of yellow fever, which does not resist cold, and it would be less injurious than steam or sulphur fumes to leather and other material.

SMALLPOX.

During the year smallpox has prevailed in the following States and Territories, namely, Arkansas, Arizona, Connecticut, Georgia, Illinois, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New York, Ohio, Pennsylvania, Rhode Island, Tennessee, Vermont, District of Columbia, and Wisconsin. The suppression of this disease has been left, except in two instances, to the State or local authorities without aid from the Bureau, the two exceptions being at Chicago, Ill., and Washington, D. C.

A number of inspections have been made, by orders from the Bureau, of infected localities, with a view to determining the presence of the disease. The aid to Chicago was not to the city direct, but consisted in the vaccination of seamen and crews of outgoing vessels, with a view to protecting the other cities on the Lakes.

SMALLPOX IN CHICAGO, ILL.

DEPARTMENT OF HEALTH,
Chicago, April 3, 1894.

SIR: Yours of March 31 asking for information regarding the prevalence and mortality of smallpox in Chicago received. During 1893 we had in Chicago 140 cases of smallpox. Excepting March and May it occurred every month during the year.

Thirty-five cases, however, were in November and 66 in December. There were 23 deaths, none of which occurred in any who had been successfully vaccinated, and but few of the cases could be traced to their origin. Some, however, were traced beyond the city, others to emigrants as the most probable source of infection, yet early in the summer we found 3 cases within two days in three different sections of the city.

Careful and extended investigation leads me to the belief that during the early summer there were several cases of smallpox of a very mild character among the people who mingle continuously with the public, the disease being so mild that a physician was not necessary; consequently a diagnosis was not made. In 1893 the disease occurred at 97 different points. From not one of these points did secondary cases occur after we disinfected the premises.

During January, 1894, there were 188 cases. There were 29 deaths, 7 of which occurred outside of the hospital and were of the hemorrhagic form. None of the 7 had been vaccinated, and but few of the 29 fatal cases had any evidence of successful vaccination.

In February there were 233 cases, with 55 deaths. These were largely among adults of the lodging-house class, who were greatly debilitated by dissolute habits and dissipation. The death rate in the unvaccinated was 50 per cent, and was very much greater among adults than among children. The disease was found in 93 different points, all of which were thoroughly disinfected.

During the month of March we have had 305 cases, with about 95 deaths. The vaccinal history is but a repetition of previous months. We have used since December 226,400 vaccine points. We use mostly the Chelsea and Marietta virus, and have uniformly good results from both. Vaccination is still being pursued with intelligence and vigor. We have made a house-to-house inspection with the aid of the police force of the city, looking after concealed cases. So far the police have not found any cases that have not already been announced, and it is demonstrated further that physicians report almost faultlessly contagious diseases of every kind.

This inspection will be continued until the city has been gone over three or four times. Our public schools have required vaccination for many years as one of the requirements of admission, and through a letter from me to his grace the archbishop an order was issued from him to all Catholic schools urging vaccination and cooperation with this department. All the children of public schools have been revaccinated, and of the parochial schools as well. With this thorough vaccination and rigid disinfection done by us, although the infection seems to be in the poorer quarters of the city rather widespread, yet we do not believe it possible that the disease can assume much greater proportions than at the present time. Indeed, we have every reason to believe that with this work and the approach of warmer weather the disease may be entirely abated before fall.

Very truly, yours,

ARTHUR R. REYNOLDS,
Commissioner of Health.

INSPECTION OF VESSELS.

The following circular letter was sent to the local quarantine or health officers of the various ports located on the Great Lakes:

"TREASURY DEPARTMENT,
"OFFICE SUPERVISING SURGEON-GENERAL MARINE-HOSPITAL SERVICE,
"*Washington, D. C., May 10, 1894.*

"SIR: I would respectfully inform you that, owing to the prevalence of smallpox in the city of Chicago, medical officers of the Marine-Hospital Service have been stationed at that port for the purpose of vaccinating the crews of all vessels leaving the port of Chicago for other ports in the United States.

"To prevent the spread of the disease to other cities on the Great Lakes, Article I, paragraph 1, *bb*, Maritime Quarantine Regulations of the United States, requiring the inspection of all vessels from ports where smallpox is prevailing prior to their entry, should be enforced.

"Very respectfully,
"WALTER WYMAN,
"*Supervising Surgeon-General Marine-Hospital Service.*"

CHICAGO, ILL., *May 8, 1894.*

GENERAL: Referring to telegraphic correspondence, I have to say that the inspection and vaccination of outgoing crews will begin this day at 12 m. Passed Assistant Surgeon Brooks will commence the inspection. A tugboat has been chartered, but I have only made a temporary arrangement with the Vessel Owners' Towing Association until further instructions are received from your office. Vessels in this port leave at all hours of the day and night, and an all-night service will be required. * * *

In regard to vaccination of crews, this office has offered, by circular and otherwise, free vaccination ever since the beginning of the smallpox scare here, under paragraph 95 of the Regulations. Since the cases have appeared on two steamers in the lake passenger trade, an officer has visited the boats and vaccinated the crews whenever notified, but the extent of the river dockage, many miles in length, precludes their vaccination at the docks, except near the mouth of the river. As the vessels must all pass the mouth of the river, our inspections will be made opposite the barge office, just outside of the Rush Street Bridge. * * *

The collector of customs by a timely circular, a copy of which I inclose, has cooperated in this quarantine duty very effectively.

Further details of the organization of the service will be given after the arrival of Passed Assistant Surgeon Woodward.

Very respectfully,
JOHN B. HAMILTON,
Surgeon, Marine-Hospital Service.

[Inclosure.]

OFFICE OF THE COLLECTOR OF CUSTOMS,
Chicago, May 7. 1894.

TO OWNERS AND MASTERS OF VESSELS:

The authorities of the United States charged with the execution of the quarantine law having been advised that certain ports upon the lakes are quarantined against vessels clearing from Chicago, upon the representation that smallpox is epidemic here, have decided, in the interest of vessel owners and masters themselves, that vessels shall not clear without a bill of health. Arrangements are making whereby an officer of the Marine-Hospital Service will be at the service of outgoing vessels for the purpose of mustering the crew, vaccinating the same where necessary, and of giving the necessary bill of health, which will enable the master to report at his destined port without inconvenience arising from any apprehension that he carries the infection. The examination will be made at or near Rush Street Bridge with as little impediment to vessels as possible, it being the purpose of the Marine-Hospital authorities to provide the boarding officer with a steam launch. The regulation is entirely in the interest of the public health and of the vessels, and the collector admonishes all of the interests involved that ready acquiescence with the regulations will be useful to all concerned.

MARTIN J. RUSSELL, *Collector of Customs.*

REPORT OF THE CONFERENCE OF STATE BOARDS OF HEALTH.

A conference of representatives of the States immediately around Chicago was held in Chicago May 9 and 10. The alarming increase of smallpox in Chicago and the increasing danger of its spread to contiguous States was the reason for the conference. The State boards of health represented were Illinois, Indiana, Ohio, Michigan, and Wisconsin. The United States Marine-Hospital Service was represented by Surg. John B. Hamilton. After the conference had nearly perfected its propositions concerning what, in its judgment, should be done at once, the health commissioner of Chicago came in, and the propositions were again considered by all present. His name was signed, with the others, to the propositions agreed to as necessary to stop the spread of smallpox in a large city. The propositions adopted were as follows:

"1. The city should be divided into districts containing not more than 10,000 people.

"2. Each district should be placed under the supervision of a competent medical inspector with necessary assistants to (*a*) make a house-to-house inspection; (*b*) to successfully vaccinate within the shortest possible time all persons who have not been vaccinated during the outbreak, and that the first vaccination be within seven days; (*c*) to properly disinfect all houses and their contents where smallpox occurs.

"3. Necessary means and appliances for efficient disinfection of materials, premises, etc., should be provided as the exigencies of each district may require.

"4. Each case of smallpox should be immediately removed to a suitably constructed and properly equipped and officered isolation hospital.

"5. Except in extreme cold weather, hospital tents, as prescribed in the United States Army Regulations, floored and warmed, are preferable to the average hospital or private dwelling, and increase the chances of recovery of the patients. Cases of smallpox necessarily detained in their own homes should, with their attendants, be rigidly isolated during the period of danger, and physicians visiting such patients professionally shall be subject to such regulations as may be prescribed by the local health officer.

"6. Persons exposed to smallpox contagion should be immediately vaccinated or revaccinated, and kept under observation for not less than fourteen days from time of last exposure.

"7. It is the sense of this conference that where such measures are all enforced it will not be necessary for neighboring cities and States to exclude all persons who come from such city who are not protected against smallpox by vaccination, and to require disinfection of all baggage and merchandise capable of conveying smallpox infection."

A resolution relative to lake ports was adopted by the conference, also one relative to land quarantine, the two being as follows:

"*Resolved*, That no vessel plying on the lakes should be allowed to enter any port within the boundaries of our respective States without having on board, subject to inspection, a bill of health, duly signed by an officer of the United States Marine-Hospital Service.

"*Resolved*, That in the opinion of this conference strict quarantine by land is unnecessary at present, but the question may well be considered now whether any person from any city where smallpox continues to exist in epidemic form should be allowed to stop in our States without having a certificate of vaccination within the past three years, and that, in case of establishment of quarantine, all passengers boarding trains should be informed that unless provided with vaccination certificates from proper authorities they will be liable to examination and revaccination at the State line."

On the invitation of the conference a meeting was called of the clothing and textile garment manufacturers of Chicago, which meeting appointed a committee to meet the conference. At that meeting the conference submitted propositions as follows:

"*Resolved*, That this conference respectfully informs manufacturers of clothing that, owing to the prevalence of smallpox in certain districts of this city, deep apprehension exists in regard to the possible infection of clothing and textile garments made or finished by persons or families living in said districts, some of whom are in close relation with the sick, either in the same house or having free communication therewith.

"That in view of these facts we further inform the said manufacturers that under the circumstances as above set forth we shall be obliged to recommend to our several State boards of health that no clothing or ladies' dresses or textile garments for sale be allowed to enter or be distributed within our respective States, except in accordance with the following measures:

"That an efficient daily inspection, with all that such inspection implies, of all places in which such goods are manufactured in the city of Chicago, be established and maintained under the direct supervision of the Illinois State board of health, to the end that no such articles from any infected locality shall be put upon the market for sale or shipment, or be otherwise distributed to the menace of the public health.

"The adoption of the foregoing measure will, in our opinion, measurably restore confidence and facilitate trade, but we desire to point out that the continuance of trade will finally depend on efficient general sanitary operations for the suppression of the disease."

SMALLPOX IN WASHINGTON, D. C.

Assistance was given to the District of Columbia by the detail of a medical officer to assist in suppressing the disease, and another officer was detailed to make observations as to the efficiency of the measures introduced and to keep the Bureau accurately informed. A portable steam disinfecting chamber which had just been constructed for the use of the Marine-Hospital Service was placed at the disposal of the city health officer. The operations of the Bureau are fully set forth in the following correspondence:

WASHINGTON, D. C., *October 26, 1894.*

SIR: The Commissioners of the District of Columbia beg leave to express to you their high appreciation of your courtesy in placing at the disposal of the health officer of the District the new steam disinfecting plant recently purchased for your department.

In view of the severe labors entailed upon the health officer and his assistants, they would be greatly obliged to you if you can further aid them by detailing one of the surgeons of your Service to assist the health officer in the present emergency.

I have the honor to be, with great respect, very truly yours,

JOHN W. ROSS,
President Board of Commissioners, District of Columbia.

The SURGEON-GENERAL MARINE-HOSPITAL SERVICE.

OFFICE OF SUPERVISING SURGEON-GENERAL, MARINE-HOSPITAL SERVICE,
Washington, D. C., October 27, 1894.

SIR: I have the honor to acknowledge the receipt of your letter of the 26th instant, requesting the detail of one of the surgeons of this Service to assist the health officer in the present emergency. In accordance with this request, and with the approval of the Honorable Secretary of the Treasury, I have detailed P. A. Surg. H. D. Geddings for this purpose. I have further to state that Surg. Preston H. Bailhache, in charge of the marine hospital at New York, has been detailed for temporary duty in this Bureau with a view of keeping me informed of all matters connected with the present outbreak of smallpox. Both of these officers have had large experience, and Surgeon Bailhache will be my personal representative in communicating either with the health officer or the Commissioners.

Respectfully, yours,

WALTER WYMAN,
Surgeon-General Marine-Hospital Service.

Hon. JOHN W. ROSS,
President Board of Commissioners, District of Columbia.

WASHINGTON, D. C., *October 29, 1894.*

SIR: The Commissioners have the honor to tender you their acknowledgments for the courtesy of your prompt compliance with their request in detailing P. A. Surg. H. D. Geddings, of the Marine-Hospital Service, to assist the health officer in the present pestilent emergency, and to express to you their sincere appreciation of your willingness and evident desire to cooperate with them in the suppression of a possible epidemic.

Respectfully,
JOHN W. ROSS,
President Board of Commissioners, District of Columbia.

WASHINGTON, D. C., *October 31, 1894.*

SIR: In obedience to your telegram of October 25, 1894, detailing me for special duty in this city as inspector to investigate and report upon a threatened invasion, of smallpox in Washington, D. C., I have the honor to report as follows:

Arriving here on October 26, I learned that the first case, resulting in death, occurred at No. 433 Fourth street NE., in the person of a child, the daughter of Mr. P. J. Coston, assistant attorney in the Interior Department, who contracted the disease, it is believed, while in Vermont or in the cars while en route home early in October. Following this case was that of Mary Mundel, a colored servant in the Coston family, who was removed to the quarantine hospital in the southeastern suburbs of the city, where she subsequently died. In quick succession the following cases were reported to Dr. William C. Woodward, health officer of the District, who had already begun necessary precautions to prevent the spread of the disease: Mary Thomas, colored, No. 243 Fourteenth street NE.; Mary Brown, colored, No. 202 D street NW.; Judge E. M. Rucker, No. 1104 Twelfth street NW.; William Owens, No. 302 Fourth street SE.; Judge James J. Parker, No. 1810 Fourth street NW.; George Anderson, No. 632 G street NW.; Samuel Mundel, colored, No. 433 Fourth street NE., and Charles E. Williams, colored, No. 915 Eighth street NW., which was reported to the health officer October 28, and is the last case up to date. All the above cases, except Mr. Coston's child, who died at its home, No. 433 Fourth street NE., were removed to the quarantine hospital as soon as reported to Dr. Woodward, who recognized the necessity of minimizing the foci of infection.

In tracing the course of the disease it was found that every case had its origin from direct or indirect communication with Mr. Coston's child or himself. The center of infection was in the office of the Assistant Attorney-General in the Patent Office, Interior Department, where Mr. Coston was employed as a law clerk. The disease was communicated through Mr. Coston to Messrs. Rucker, Parker, and Anderson, who were in adjacent rooms, and also to Mr. Owens, who met and conversed with Mr. Coston upon the street. Mr. Owens's case was malignant, and he died in hospital on the 30th.

The Commissioners of the District met immediately upon the announcement of the appearance of the disease in the city, which, unfortunately, was not recognized at first, having been diagnosed by the attending physicians as chicken pox, and established a smallpox hospital in the suburbs of the city, to which all cases were immediately removed. Commissioner Ross and Health Officer Woodward were untiring in their efforts to stamp out the disease, and orders were issued that all school children, the poor of the city, and inmates of the hospitals and jail should be immediately vaccinated. Subsequently the Patent and Census offices were closed and disinfected, and at this date all fear of the disease becoming epidemic has been materially allayed. Total cases in the District, 10; deaths, 3.

I also visited Hyattsville, Md., where a suspicious case had been reported. Upon investigation I found that Mr. Van Buren Norwood, a messenger in the Interior Department, had been in close communication with George Anderson the day previous to the appearance of the eruption in Anderson's case; but as he had been successfully vaccinated on the 25th instant and showed well-defined vesicular papules upon his arm, with enlargement of the glands in his axilla, the chance of immunity is greatly in his favor. All the members of the household with whom he came in contact had been vaccinated by Dr. G. A. Richardson, of Hyattsville, whom you had notified by telegraph regarding his case the day previous, so that in the event of the disease appearing no spread of the contagion is anticipated.

Very respectfully,

PRESTON H. BAILHACHE,
Surgeon, Marine-Hospital Service.

To the SURGEON-GENERAL MARINE-HOSPITAL SERVICE.

WASHINGTON, D. C., *November 6, 1894.*

SIR: I have the honor to report that in accordance with your instructions I reported to Dr. W. C. Woodward, health officer of the District of Columbia, on October 26, to assist him in the increased duties devolving on him by reason of the appearance of smallpox in the District. Dr. Woodward made no formal assignment of duty to me, but desired that I should aid him in various ways as exigency required. The service was organized by the appointment of Dr. Beall as sanitary inspector, whose duty it was to visit all suspicious cases reported, and to decide on their nature. Those reported to be smallpox by Dr. Beall were immediately removed to the contagious disease hospital, under the charge of Dr. Nevitt, and the premises were then thoroughly disinfected under the supervision and direction of Dr. O'Malley, who had under his orders a corps of workmen for the purpose.

The disinfecting agents employed were the acid solution of mercuric chloride 1-500, and fumigation by sulphur dioxide, at least 3 pounds of sulphur being burned to the 1,000 cubic feet. The practice was to destroy all bedding and other articles incapable of disinfection by these methods, but with the arrival of the Kinyoun-Francis steam disinfecting chamber and sulphur furnace, which had been placed by you at the disposal of the health officer, the destruction of these articles was abandoned, and disinfection by steam in strict accordance with the interstate quarantine regulations has been substituted therefor.

It is proper here to note that Drs. Beall and O'Malley, with their respective corps of laborers, had been quartered in vacant buildings on the square at the corner of Eighteenth and B streets, NE., which establishment was isolated and officially designated as the "Quarantine Station." Here was constructed a closed shed, 50 by 25 feet, for the shelter of the disinfecting apparatus, and in this shed the steam chamber was located in permanent position, and the goods brought to the station in closed wagons, and on the completion of the disinfection were returned to the owners in wagons other than those bringing them. It is gratifying to report that the two apparatus work admirably, and that with the steam chamber a temperature of 240° F. is quickly reached and easily maintained, and that by means of the air pump attached the perfect circulation and penetration of the steam are insured.

By request of the honorable the Secretary of the Interior I assisted Dr. Gibbes, of the Interior Department, in the fumigation of that building, and upon the further invitation of the Secretary made suggestions as to the fumigation of all mail matter leaving the Interior Department and the Census Office.

At this date it is gratifying to be able to report that the thorough preventive measures which have been taken by the health officer seem to have resulted in the suppression of the disease, and the relieving of the panic which at one time threatened to become general and uncontrollable. Vaccination has been generally practiced throughout the city, and it is believed that with the passage of a few more days without new cases the outbreak will be at an end, and that without ever having assumed epidemic proportions, which certainly is a triumph and one more vindication of the advance of sanitary science in its war on contagious and infectious diseases.

Very respectfully,

H. D. GEDDINGS,
Passed Assistant Surgeon, Marine Hospital Service.

The SURGEON-GENERAL MARINE-HOSPITAL SERVICE.

SMALLPOX IN THE UNITED STATES.

The following is a record of smallpox in the United States from January 1 to November 30, 1894, as reported to the Marine-Hospital Service:

Place.	Date.	Cases.	Deaths.	Remarks.
Arizona:				
Nogales	Apr. 12	1		
Arkansas:				
Texarkana	Apr. 9–May 23	80	24	
California:				
Alturas	May 1–31		1	
Cedarville	do		1	
Connecticut:				
Bridgeport	Apr. 16–26	19	5	
	May 1–31	5	4	
Danbury	do	1	1	
Manchester	Apr. 1–30	1	1	
Milford	Apr. 11	1		
New Haven	Apr. 1–30	1	1	
Putnam	Apr. 16	1	1	
Waterbury	Feb. 20	1		
Winchester	Jan. 1–31		4	
District of Columbia:				
Washington	May 11–26	1	1	
	Oct. 13–Nov. 22	16	5	
Georgia:				
Atlanta	Feb. 28	6		5 varioloid.
Illinois:				
Chicago	Jan. 1–31	188	29	
	Feb. 1–28	233	55	
	Mar. 1–31	305	100	
	Apr. 1–30	544		
	May 1–31		253	
	June 1–30		171	
	July 1–31		51	
	Aug. 1–31		53	
	Sept. 1–30		31	
	Oct. 1–31		40	
	Nov. 1–30		51	
Downers Grove	Aug. 22	4		
Genoa	do	1		
Paris	do	4	1	
Indiana:				
Blackford County	May 22	1		
Dekalb County	June 19	1		
Fulton County	June 22	27	7	
Indianapolis	Apr. 19	2		
	Aug. 16–Sept. 17	2		
Johnson County	May 22	1		
Kosciusko County	Aug. 16–Sept. 17	4		

Smallpox in the United States—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Indiana—Continued:				
Lake County	May 22–June 7	1		
Marion	Aug. 17–Sept. 17	1		
Marshall County	May 22	4	2	
Pulaski County	do	3		
Walkerton	Nov. 8	3		
Wayne County	May 22–June 7	3	1	
Whitley County	Aug. 16–Sept. 17	1		
Iowa:				
Dubuque	May 1–31	1		
Kansas:				
Atchison	May 19	30	7	
Kentucky:				
Louisville	Jan. 1–May 8	17	1	
Louisiana:				
New Orleans	Jan. 6–27	4	1	
	Feb. 3-10	1		
	Mar. 10–24	1	1	
	Apr. 14–21	1		
	May 5–12	1		
	June 2–9	1		
Maine:				
Kennebec	May 19	2	1	
Penobscot	Apr. 25	1		
Maryland:				
Baltimore	Apr. 28–May 5	6		
	May 5–12	5		
	May 19-26	3		
	June 2–9	1		
	Aug. 4–11	1		
Charles County, near Glymont	Oct. 27–Nov. 22	3		
Massachusetts:				
Boston	Jan. 1–Feb. 3	9	5	
	Feb. 17 Mar. 3	11	5	
	Mar. 3–31	24	6	
	Apr. 1–28	14	7	
	Apr. 28–May 5	5		
Chelsea	May 19	2		
	June 11	4		
	June 26	1		
Springfield	May 26–June 2	3		
Worcester	June 7–14	1		
	July 12–19	1		
Michigan:				
Adrian Township	Nov. 23	1	1	
Bay City	May 7–June 6	5	2	
	June 19–July 25	1	1	
Berlin Township	do	2	1	
Cheboygan	Oct. 9	2		
Clayton Township	June 28	2		
Crystal Falls	Feb. 13	1		
Danby Township	Nov. 17	5		
Detroit	May 28	128	30	
	June 2–9		1	
	June 18–30	18	4	
	July 1–31		3	
	Aug. 4–25		2	
	Sept. 22–29		1	
	Oct. 13–Nov. 10	27	7	
Farmington Township	June 18–July 25	1	1	
Frenchtown Township	June 16–July 25	5	1	
Grand Rapids	May 16–June 6	4		
Ishpeming	Mar. 13–June 6	2		
Jackson	Apr. 27–June 6	4	2	
Kalamazoo	Mar. 24–July 25	2		
Macomb Township	June 20–July 25	5		
Manchester Township	Oct. 8–20	12		
Marquette	May 2	1		
Menominee	Jan. 27–July 25	6	3	
Muskegon	May 6–June 6	3	1	
Norville Township	Oct. 20	1		
Otsego	Jan. 9–July 25	6	2	
Pontiac	June 19–July 25	2		
Rives Township	Sept. 22	1		
Royal Oak	Nov. 1	10	3	
St. Johns	Oct. 28	12	3	
Sebewa	Nov. 14	12	1	
Sturgis	May 11–July 25	10	4	
Ypsilanti	June 2–July 25	1		

Smallpox in the United States—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Minnesota:				
Belle Plains	Aug. 19	1		
Brainerd	Nov. 15	1		
Duluth	Apr. 21	9	2	
La Crescent	June 22	1		
Red Clover Township	June 13	1	1	
St. Paul	Feb. 24	11	1	
	July 30	3		
Two Harbors	June 5	1		
Missouri:				
Mountain Grove	Aug. 1	18	2	
St. Louis	Jan. 6–Feb. 3	4		
	Feb. 3–17	3	1	Died at quarantine, 16 miles below city.
Nebraska:				
Omaha	Feb. 1–28	1		
	Mar. 24–31	1		
	Apr. 1–30	2		
	May 1–31	1		
New Jersey:				
Newark	Apr. 28–May 12	2	1	
	July 21–Aug. 11	30	5	
	Aug. 25–Sept. 8	11	4	
	Sept. 8–29	12	2	
	Sept. 30–Oct. 20	6		
New York:				
Albany	Apr. 1–30		5	
	May 1–31		3	
Binghamton	Mar. 17–24	3	1	
	Apr. 7–14	1	1	
Brooklyn	Jan. 1–Feb. 3	62	1	
	Feb. 3–Mar. 3	79	8	
	Mar. 3–31	116	15	
	Apr. 1–May 5	108	27	
	May 5–26	26	3	
	May 26–June 30	15	8	
	July 1–Aug. 4	7	3	
	Sept. 1–8	2		
	Sept. 22–29	1		
	Oct. 6–13	1		
	Oct. 20–Nov. 3	2	1	
	Nov. 24–Dec. 1	1		
Coxsackie	Mar. 1–31		2	
	Apr. 1–30		1	
Croton on the Hudson	May 1–31	2		
Edgewater	do	2	2	
Evans	Sept. 1–30	1		
Flushing	Apr. 1–30	1	1	
Long Island City	July 1–31	2	2	
Middletown	Aug. 1–31	1	1	
Mount Vernon	July 21–28	1		
New Brighton	July 7–14	1		Varioloid.
	July 24–31	1		
Newburg	June 1–30	2		
Newtown	Jan. 1–31		2	
	Feb. 1–28		1	
New York City	Jan. 1–31	89	13	
	Feb. 1–28	52	27	
	Mar. 1–31	126	21	
	Apr. 1–30		54	
	May 1–31		37	
	June 1–30		24	
	July 1–31		19	
	Aug. 1–31		6	
	Sept. 1–30		8	
	Oct. 27–Nov. 30		11	
Onondaga	May 1–31	1		
Perrinton	do	3		
Port Jervis	Aug. 1–31	1	1	
	Sept. 1–30	1	1	
	Oct. 1–31	1	1	
Rochester	May 1–31	1	1	
	July 1–31	2		
Salina	May 1–31	1		
	June 1–30		1	
Seneca Falls	May 1–31	9		
	July 1–31	1	1	
Stony Point	May 1–31	1		
Troy	Feb. 1–28	2	2	
Utica	do	1	1	
Worcester	July 14–21	1		
White Plains	May 1–31		1	
Yonkers	Feb. 1–28		1	

Smallpox in the United States—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Ohio:				
Cincinnati	Nov. 23	1		
Cleveland	May 15-19	2		
	June 23-30	1	1	
	Sept. 22-29	1		
	Oct. 8	1		Varioloid.
Deerfield	Nov. 5-Dec. 1	4		
Toledo	Feb. 1-Mar. 31	4		
	Apr. 6-27	3		
	May 4-11		1	
	May 27-June 1	2	1	
Pennsylvania:				
Bart	June 11	1		
Berwick	do	1		
Blandon	May 5-17	19		
California	June 18	1	1	
Carlisle	Jan. 1-9	1		
	June 13-July 7	6	3	
	Aug. 4-Oct. 6	4		
Carroll Township	Aug. 9-Oct. 6	1		
Dagus Mines	Feb. 22	1	1	
Danville	Mar. 14-May 5	77	4	
Dorrencetown	May 5-17	1		
Derry Township	do	2	2	
Friedensburg	Jan. 18	1		
Fritztown	Jan. 6			Smallpox reported.
Gibraltar	Jan. 18	1		
Gouglersville	Mar. 21	1		
Harrisburg	Apr. 11-Oct. 6	11	1	
Hyde Park	May 13-17	3		
Jeannette	Jan. 18	2	1	
Jerseytown	Mar. 13	3	1	
	Apr. 4-May 5	1	1	
Lee	Apr. 11-May 5	16		
Lewisburg	Mar. 19-May 5	12		
Lewistown	Mar. 11-May 5	1	1	
	June 3-July 7	5		
Lidels Crossing	May 5-17	1		
McKeesport	Aug. 7-Oct. 6	1		
Mechanicsburg	Mar. 6	2		
Mocanagua	Mar. 14	1	1	
Mohns Store	Mar. 13	1		
Muncy	Apr. 11-May 15	1	1	
Philadelphia	Feb. 13	1		
	Mar. 6	1		
	Apr. 11-May 5	4		
	May 5-17	1		
	June 13-July 7	4		
	Aug. 4-11		1	
	Aug. 9-Oct. 6	8	1	
	Oct. 6-22	3	1	
	Oct. 22-Nov. 27	37	3	
Pittsburg	Feb. 13	5		
	Mar. 6	9		
Pottsville	Jan. 18	1		
Princetown	Mar. 19	1		
Pottstown	Feb. 13	1	1	
Reading	Jan. 1-26	5		
	Apr. 11-May 5	4		
Ridley Park	June 13-July 7	5		
	Nov. 17	1		
Riverside	Mar. 3	2		
Shamokin	Feb. 13-Mar. 6	1		
Shermansdale	Aug. 9-Oct. 6	1	1	
Shickshinny	Apr. 11-May 5	8	1	
Shillington	Jan. 10	1		
Striking Springs	Mar. 17	1		
Strasburg	July 9	1		
Sunbury	Apr. 9	3		
Towanda	Aug. 9-Oct. 6	1		
Tyrone Forges	Feb. 8	14		
Walnuttown	May 12-17	1		
Washingtonville	May 19	1		
West Hempfield	May 5-17	1		
Wilkinsburg	Jan. 17	3		
	Jan. 23-Feb. 13	2		
Williamsport	Feb. 2	2		
Wilkinsburg	Jan. 1-19	2		
Rhode Island:				
Providence	Apr. 28	1		
	May 5	2	1	
	May 7	1		

Smallpox in the United States—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Rhode Island—Continued:	May 15	12	1	
Providence	May 26	1	....	
	May 26–June 2	....	1	
Tennessee:				
Chattanooga	Feb. 7	4	....	
	Mar. 31	4	....	
Memphis	Feb. 14	3	....	
Nashville	Jan. 8	5	....	
	Jan. 14–27	5	1	
	Feb. 3	2	....	
	Feb. 5	2	....	
Texas:				
El Paso	May 4	1	....	
San Antonio	Mar. 28	1	....	
Victoria	Feb. 15	1	....	
Vermont:				
Pomfret	Oct. 20–Nov. 14	2	....	
Wisconsin:				
Allonez	Apr. 21	2	....	
Beaver Dam	Nov. 5–26	1	1	
Cascade	July 1–30	1	....	
Clyman Township	May 30–June 9	3	1	
Dover	Sept. 10–24	2	....	
Ellsworth	Oct. 8–22	1	1	
Fort Howard	Feb. 14	4	....	
Franklin	Oct. 22–Nov. 19	17	3	
Granville	July 30–Aug. 20	1	....	
Green Bay	Mar. 23	1	....	
Greenfield	July 30–Aug. 20	1	....	
	Aug. 20–Sept. 10	2	1	
	Nov. 19	24	....	
Janesville	Jan. 30	1	....	
Juda	July 1–30	5	....	
	July 30–Aug. 20	....	1	
La Crosse	Sept. 10–24	1	....	
Lake	Aug. 20–Sept. 10	2	2	
Liberty	Sept. 24–Oct. 28	1	1	
Madison	July 3–Aug. 20	1	....	
Manitowoc	Apr. 21	3	....	
	May 30	2	....	
Menesha	Apr. 21	4	1	
	May 30	1	....	
Merrimac	May 30–June 7	4	1	
Milwaukee	Jan. 30	1	....	
	Mar. 1–31	1	....	
	Apr. 21	1	....	
	May 30	7	....	
	June 9–30	11	1	
	July 1–30	55	6	
	July 30–Aug. 20	78	22	
	Aug. 18–25	32	10	
	Aug. 25–Sept. 1	36	6	
	Sept. 1–29	178	39	
	Sept. 30–Oct. 6	44	13	
	Oct. 6–Nov. 3	224	82	
	Nov. 3–Dec. 1	114	38	
Milwaukee Township	Sept. 24–Oct. 8	1	....	
	Oct. 8–Nov. 19	7	1	
Mitchell	July 1–30	2	1	
Muskegon	Oct. 22–Nov. 19	7	3	
Portage	Feb. 14	1	....	
Raymond	Aug. 20–Sept. 10	1	....	
	Nov. 27–30	1	....	
Spring Prairie	Oct. 22–Nov. 19	4	1	
Superior	June 16–23	1	1	
	Mar. 23	1	....	
Two Rivers	Sept. 10–24	2	1	
	Sept. 24–Oct. 8	2	....	
	Oct. 22–Dec. 10	9	1	
Waukesha	May 30	....	1	
Wausau	June 1–9	1	....	
	July 1–30	[illegible]	1	
	July 30–Aug. 20	1	....	
	Aug. 20–Sept. 10	1	1	
	Sept. 24–Oct. 8	1	....	
Wauwatosa	July 30–Aug. 20	1	....	
	Aug. 20–Sept. 10	3	....	
	Sept. 10–24	9	2	
	Sept. 24–Oct. 8	18	3	
	Oct. 8–19	18	3	
Wonewec	Oct. 8–22	6	....	

CHINESE PLAGUE.

The plague was probably imported into Canton in 1894, by way of Thibet, from northern India. From Canton it was readily conveyed to Hongkong by persons who removed from one city to the other while actually suffering from the disease or during the process of incubation. The steamer journey between the two places occupies only about eight hours. During the height of the epidemic it was almost a daily event for deaths to occur en route.

In considering the causation of the disease account must be taken of the prevalence of insanitary conditions in Chinese towns. A prolonged period of drought preceded the outbreak. The rainfall in south China during the winter is small, but during the month preceding the outbreak it was exceptionally so. This absence of rain caused an impure water supply and a more than usually insanitary condition of houses and drains. The temperature was also abnormally low, and, consequently, favorable to the development of the disease. All the fostering conditions for an epidemic were therefore present.

In Yunnan pigs, goats, rats, and other animals die in great numbers before the disease attacks the human subject. In Canton rats were the only animals observed to be affected.

No absolutely reliable estimate can be reached as to the mortality, but the total number of deaths was probably 40,000. One report gives the number of coffins passing through one of the city gates in one day at 170. Another gives 1,000 coffins carried out by one gate in forty days. Although all classes suffered, certain conditions of life appeared to confer immunity. The greater number of persons attacked were women and children, especially female children, or those living mostly indoors. Persons living upstairs were less liable to the disease than those living on the ground floor. The boating population, who live and sleep on the water, enjoyed almost complete immunity. In the foreign quarter of Canton, the population of which is about 300—Europeans and Americans—not a single case occurred among human subjects or animals.

The action of the Bureau, in view of the prevalence of plague in China, consisted in placing a sanitary inspector on duty at Yokohama, where all vessels bound from ports in the Orient, coming to the United States, make harbor. The attention of the quarantine officers on the Pacific Coast was specially directed to the existence of this disease in Asia, and they were directed to enforce the quarantine regulations rigidly against it.

The following report upon the nature of the plague was received by the Bureau from Professor Kitasato:

PRELIMINARY NOTICE OF THE BACILLUS OF BUBONIC PLAGUE.

[By Prof. S. Kitasato.]

HONGKONG, *July 7, 1894.*

Early this year (1894) an epidemic of bubonic plague broke out in the south of China and Canton, from which city the disease was imported into the neighboring island of Hongkong, where it has prevailed from the beginning of May until now.

The Imperial Japanese Government sent a commission to Hongkong in order to study the plague, especially as regards its bacteriological character and its pathological and clinical features. The pathology and medicine were the special study of Professor Aoyama and the bacteriological part received the care of the author. Having left Japan 5th of June, 1894, we arrived at Hongkong on the 12th of the same month. Here Dr. Lowson, acting superintendent of the Government city hospital, put everything needful at our disposal in the most friendly spirit. A room in the Kennedy town hospital (one of the plague establishments) was given to us, and there we began our work on the 14th of June last.

On that day we were able to see a post-mortem examination performed by Professor Aoyama. I found numerous bacilli in the bubo (in this case a swelling of the inguinal glands), in the blood of the heart, in the lungs, liver, spleen, etc. As the post-mortem examination was made eleven hours after death, I had still doubts about the true significance of what I found. I therefore made a cultivation and inoculated a mouse from a small piece of the spleen. On the same day I took, with all due precautions, some blood from the finger tips of a patient who had the disease in a very bad form, with a temperature of 40.5° C., swelling of the axillary glands, etc. Under the microscope I found bacilli with capsules, the poles of which were stained much deeper with aniline dyes than the middle part. This gives them a great likeness to the bacilli of chicken cholera (*bacillus cholera galinarum*). On the next day all the serum cultivations which were prepared in the incubator from the different organs of the body and of blood from the finger tips showed a growth of microorganisms which, under the microscope, were not to be distinguished from those which we found in the blood and in the interior of the bubo at the first post-mortem examination. The bacilli differed only by being a little longer and staining easier in the middle than those taken from the blood. With these cultivations I inoculated subcutaneously mice, guinea pigs, rabbits, and pigeons.

The mice which were inoculated on the first day with a piece of spleen and some blood from the finger tips died in two days' time, and at the post-mortem examination upon them I found œdema round the place of inoculation, the same bacilli in the blood, in the internal organs, and in the œdematous part around the place of inoculation.

All animals which had been inoculated with the cultivations (pigeons excepted) died after periods extending from one to four days, according to the size of the animal. The same state of the organs after death and the same bacteriological observations always obtained as in the case of the mice previously referred to. I propose to give further details about my experiments on animals at a later time.

Every day I took blood from many plague patients and examined it, and almost every time I found the bacilli as above described, sometimes in great numbers, sometimes only a few in number, so that many glass slides had to be examined to find good specimens.

On the other hand, these same bacilli were to be found at every post-mortem examination (of which we had upward of fifteen) in great quantity in the bubonic swellings, in the spleen, the lungs, the liver, in the blood contained in the heart, in the brain, intestines; in fact in all internal organs without exception; and every cultivation from any particle of these parts invariably produced the same bacilli.

Suppose the contents of a bubo or a small piece of the spleen is rubbed on the cover glass, and the latter, after having been stained, is examined under the microscope (one-twelfth inch oil immersion, Zeiss), bacilli will be discovered in the form found in pure cultivation (Reinkultur). In the spleen especially the bacilli are aggregated in heaps. Bacilli from bubonic swellings and from other internal organs are more easily stained with aniline dyes in their middle part than those taken from the blood, but any serum cultivation prepared from them produces the same form of bacillus.

In any case where cultivations are prepared from parts of any internal organs or from the blood taken from the finger tips, with careful observation of all due precautions, pure cultivations (Reinkultur) of one and the same bacillus are always obtained; therefore the most intimate connection must exist between the bacillus and the disease.

Particulars about the observations at the post-mortem examinations will be given later on by my colleague, Professor Aoyama. Generally it may be said that the parts in the neighborhood of the bubo are œdematous, of a color between black and red, infiltrated with gelatinous exudation, and that the spleen is enlarged. Both phenomena are to be found in inoculated animals in which the parts round the place of inoculation present the same œdematous exudations as we find in human beings.

I shall now give a few short notes about the bacillus.

The bacilli are to be found in the blood, in the buboes, in the spleen, and in all other internal organs of the victims of the plague. The bacilli are rods with rounded ends, which are readily stained by the ordinary aniline dyes, the poles being stained darker than the middle part, especially in blood preparations, and presenting a capsule, sometimes well marked, sometimes indistinct. The bacilli found in the spleen are best stained by a solution of methyl blue. I am at present unable to say whether or not "Gram's double-staining method" can be employed. I shall report upon this on a future occasion.

The bacilli show very little movement, and those grown in the incubator in beef tea make the medium somewhat cloudy. The growth of the bacilli is strongest on blood serum at the normal temperature of the human body (37° C). Under these conditions they develop luxuriantly, and are moist in consistence and of a yellowish-gray color; they do not liquefy the serum. On agar-agar jelly (the best is good glycerin agar) they also grow freely. The different colonies are of a whitish gray color, and by a reflected light show a bluish glance; under the microscope they appear moist and in rounded patches with uneven edges. At first they appear everywhere as if piled up with "glass wool;" later on as if having dense, large centers. If a cover-glass preparation is made from a cultivation on agar-agar, and, after having been stained, is observed under the microscope, long threads of bacilli are seen, which might, by careless inspection, be mistaken for a coccus chain, but are recognized with certainty as "threads of bacilli" under closer observation.

The growth on agar gelatin is similar to that on agar-agar. In a puncture cultivation, at the ordinary temperature after a few days, they are found growing as a fine dust, in little points alongside the puncture, but with very little growth on the surface. Whether these bacilli are able to liquefy ordinary gelatin or not I am at present unable to decide, as the temperature of Hongkong ranges so high that the employment of simple nutritive gelatin is out of the question. I shall give further information on this question later.

On potatoes at a temperature of from 28° C. to 30° C. there was no growth after ten days' observation, but at a temperature of 37° C. the bacilli developed sparingly after a few days; they were whitish-gray in color and exsiccated.

As mentioned before, the bacilli grow best at a temperature of from 36° C. to 39° C. At how low a temperature growth is possible I am unable at present to state.

So far I have been unable to observe the formation of spores.

Experiments on animals.—Mice, rats, guinea pigs, and rabbits are susceptible to inoculation. If these animals are inoculated with pure cultivations, or with the blood of a plague patient in which the bacilli have been observed, or with the contents of a bubo, or with pieces of internal organs, or even with the contents of the intestine, they begin to become ill in from one to two days, according to the size of the animal. Their eyes become watery, they begin to show disinclination for any effort, later on avoid their food and hide quietly in a corner of the cage. The temperature rises to 41.5° C., and with convulsive symptons they die in from two to five days.

I must observe that in Hongkong I could only obtain small guinea pigs (weight from 100 to 150 grams) and small rabbits (from 200 to 250 grams). If I could have experimented upon larger animals it is possible life would have been somewhat prolonged beyond the periods mentioned above.

The parts around the point of inoculation are infiltrated with a reddish gelatinous exudation, the spleen is enlarged, sometimes there is a swelling of the lymphatic glands, and in all the organs the bacilli are found. The results found after death in animals are very similar to those found in anthrax and in œdema malignum.

Pigeons do not appear to be susceptible to the influence of the bacilli.

I made experiments by feeding some mice and guinea pigs with pure cultivations of the bacillus and with small pieces of the internal organs. The result was such animals perished in a few days under the same symptoms as those which had been inoculated. In all the internal organs of animals so destroyed I found the bacilli.

With the dust of dwelling houses from which the plague-stricken had been removed I made several experiments upon animals. Some of the animals died from tetanus. In one case only a guinea pig died with plague symptoms, and in this animal the same bacilli were found in the internal organs as in those of plague patients who had succumbed.

These experiments with the dust from infected houses I shall certainly continue.

Many rats and mice at present die spontaneously in Hongkong. I examined some of them. In the internal organs of a mouse I discovered the same bacilli.

POWER OF RESISTANCE OF THE BACILLI TO PHYSICAL AND CHEMICAL AGENCIES.

Experiments with desiccation.—The contents of a bubo in which the bacilli were present in great numbers were wiped over cover glasses (perfectly cleansed by heat and alcohol), and some of the cover glasses were dried in the air of a room at a temperature ranging from 28° C. to 30° C. Others I exposed directly to the sun's rays, and from among them, after an exposure of one, two, and three hours (up to six days), I removed some parts, putting such portions in beef tea and placing them in the incubator. Those which had been standing in the room from one to thirty-six hours showed a pretty good growth in the incubator, but those which had been in the room for more than four days were unable to show any growth even after one week's incubation. Those exposed directly to the sun were all destroyed after from three to four hours.

Further cultivations on serum were treated exactly like the contents of the bubo, with very similar results.

Experiments with heat.—Beef-tea cultivations which had been heated for thirty minutes in a water bath up to 80° C. were destroyed. At 100° C. in the vapor apparatus they were destroyed in a few minutes.

Chemicals—Carbolic acid.—To every 10 cubic centimeters of beef-tea cultivations which had been standing in the incubator from two to three days and had grown well, carbolic acid was added of a strength of 0.5 per cent of the whole, 0.75 per cent, and 1 per cent. They were afterwards well shaken and left at the ordinary temperature of the room. Of each of these cultivations a few drops were brought into sterilized beef tea after one, two, and three hours and left in the incubator with the following results:

Those cultivations which contained 0.5 per cent and 0.75 per cent carbolic acid and had been left standing in the room for one hour grew in the incubator after two days. A cultivation, however, of 1 per cent, which had been left standing for only one hour, did not grow even after one whole week in the incubator.

Cultivations that had been mixed with only 0.5 per cent of carbolic acid and had been left standing for more than two hours did not show growth after one week in the incubator, neither did the other cultivations containing a greater percentage produce any growth.

Quicklime.—Experiments were made with quicklime in exactly the same way as with carbolic acid, with the following results:

Those beef-tea cultivations which contained 0.5 per cent of quicklime grew sparingly after two hours; those containing 1 per cent of quicklime ceased to grow. Cultivations which had been mixed for more than three hours, even if containing only 0.5 per cent of quicklime, showed no growth.

Further experiments with chemicals should have been made, but as my time was extremely limited I had to leave them to a future time.

The following is a short review of "the plague" generally:

History shows us that plague epidemics existed in the fourteenth century both in Asia and Europe, and thousands of human beings perished. Since then, from time to time, now here, now there, an epidemic has appeared, and until lately the disease almost seemed to have vanished from the face of the earth. This, however, was not so. In China it has existed to this day, especially in Yunnan, where it occurs every year in an endemic form. From the latter place it was imported into Canton, and from Canton, for the first known time, has reached Hongkong.

This recent outbreak has given us opportunity for studying this disease—a cause of mystery for centuries—with the means which modern science places in our hands.

The principal symptoms of the disease now ravaging Hongkong are the following: After the period of incubation, which lasts from three to five days (possibly a little longer, and some doctors say as long as eight days), the patient complains of high fever and swelling of one or more of the lymphatic glands (buboes). These swellings may antedate, coincide with, or follow the rise in temperature, and are accompanied by severe pain. The most common gland affected is one of the femoral chain, next an inguinal, next axillary, and sometimes a cervical gland is affected. The tongue is coated with a grayish-white or dark-brown heavy fur. There is commonly headache, also delirium; the heart is generally affected; occasionally vomiting and diarrhea are present (not frequently the last two conditions, which are generally forerunners to a fatal issue).

In patients who survive the onset of the disease the temperature does not fall until a week has passed, and convalescence is a slow process.

Sex and age make no difference in the disease; men and women, infants and old people, are attacked equally.

If in such a case as described the blood be examined, the before-described bacilli, in greater or lesser numbers, will be found present (in 30 patients I obtained 25 positive results, and 2 of my subjects who were without bacilli were subsequently proved not to be suffering from the plague at all).

As indicated before, it is not always an easy matter to demonstrate the presence of the bacilli directly in the blood of many patients; they are present sometimes in such small numerical strength that only after examining several slides can they be discovered. In order to be safe, not only must the blood of a suspected plague patient be examined, but a cultivation should also be made.

In the buboes the bacilli always occur in the form of pure cultivations, but it is obviously not always easy to procure a specimen of bubo contents from the living subject.

The question arises, Is it possible to make a diagnosis of bubonic plague from examination of the blood of the suspect? In many cases, yes! But a good deal of bacteriological practice is required, or such diagnosis is impossible.

It is a well-known fact that so far, among infectious diseases produced by bacilli, only two micro-organisms have hitherto been found in human blood, viz, the bacillus of anthrax and the spirochætiæ of relapsing fever (we do not include the plasmodia of malaria). Here in the blood of human beings suffering from bubonic plague we have a new bacillus possessing the following qualities:

(1) This bacillus occurs in the blood, in buboes, and in the internal organs of the plague stricken only.

(2) This bacillus is not to be found in any other infectious disease.

(3) With this bacillus it is possible to produce in animals the identical symptoms which the disease presents in human beings.

From this evidence we must come to the conclusion that this bacillus is the cause of the disease known as the bubonic plague; therefore the bubonic plague is an infectious disease produced by specific bacillus.

What are the channels by which these bacilli enter the human body? We may suppose that they have three principal channels of entrance: By respiration, through an external wound, and by the intestinal tract. Examples of the first two ways, of which I shall speak later on, are abundant. Examples of the last-mentioned way are not positive so far, but, considering that we discovered the bacilli in the intestinal canal and experiments on animals prove that feeding alone produces definite results, the concession must be made that the third is a possible method of infection.

Most of the cases of bubonic plague occur among the Chinese, a few other nationalities excepted.

Whoever has looked into a Chinese dwelling in Taipingshan is at once persuaded that here is a suitable hunting ground for the plague bacillus. The houses are so filthy that they are unfit for human habitation.

What means are to be employed against the plague? Preventive measures, general hygiene, good drainage, perfect water supply, cleanliness in dwelling houses, and cleanliness in the streets. As soon as an epidemic breaks out the sick must be perfectly isolated. The infected dwellings, before the household things are removed, have to be disinfected by 2 per cent carbolic acid solution or by a solution of quicklime in a correct way. Afterwards, wearing apparel, linen, bedding, etc., should be specially disinfected by a steam disinfector for one hour at a temperature of 100° C. Should a steam disinfector not be available the things ought to be exposed directly to the sun's rays for several hours. Articles unfit for use ought to be burned. Dwelling houses thus emptied should be cleaned over again with quicklime or carbolic acid. The fæces should be disinfected carefully with quicklime. Dead bodies covered with quicklime are either to be burned or to be buried at least 3 meters from the surface. Mice and rats which have died spontaneously in dwelling houses should be carried away with proper precautions. After a patient has apparently recovered he must be kept apart from the healthy community for a period of a month, for during convalescence the bacilli may be discovered in the blood from three to four weeks after all symptoms have ceased.

Individuals ought to keep away from plague patients and infected houses and be careful about their solid and liquid nourishment.

These measures have been generally in force during the epidemic in Hongkong.

The question as to whether immunity against the bacillus of plague is possible on the lines practiced against many other bacillary infectious diseases remains at present an open one. I shall study it thoroughly later on and in an exhaustive manner.

All that I have described above must be regarded only as a short preliminary notice. The results of extensive study on the subject of the plague bacillus will be published by me at a later time.

Before I conclude this notice, I beg to tender my heartiest thanks to the colonial government at Hongkong, to all the medical men here, and especially to Dr. Lowson for his kind assistance.

LEPROSY.

Leprosy was made the subject of special consideration at the Congress of American Physicians and Surgeons held in Washington, D. C., May, 1894. The matter of national control of the disease was considered, and the following address relating thereto was delivered, by invitation.

Following the discussion a resolution was adopted requesting Congress to provide for the appointment of a commission to investigate the prevalence of leprosy and suggest means for the control of the disease.

NATIONAL CONTROL OF LEPROSY.

[By Walter Wyman, M. D., Surgeon-General United States Marine-Hospital Service.]

In the few minutes allotted to me I propose to discuss the relations of the National Government to the subject of the control of leprosy.

In October, 1889, the American Public Health Association, at its meeting in Brooklyn, passed a resolution calling upon the Marine-Hospital Service and the State board of health of Florida, and all quarantine commissioners of ports having intercourse with Cuban ports, to exercise the same vigilance with regard to leprosy that is already observed in the case of yellow fever during what is known as the quarantine period. In accordance with this request, a circular was issued by the Surgeon-General of the Marine-Hospital Service, approved by the Secretary of the Treasury and the President, December 23, 1889, forbidding entry of any vessel to any port of the United States without a certificate from the proper officer that no case of leprosy was found on board said vessel, or in case one had been found, that it had been removed from the vessel and detained at the quarantine station; with a further provision permitting the departure of the detained leper on outgoing vessels bound to the foreign country from which the leper last sailed.

The new quarantine regulations of the Treasury, promulgated April 26, 1894, provide as follows:

"Vessels arriving at quarantine with leprosy on board shall not be granted pratique until the leper with his or her baggage has been removed from the vessel to the quarantine station.

"No case of leprosy will be landed.

"If the leper is an alien passenger, and the vessel is from a foreign port, action will be taken as provided by the immigration laws and regulations of the United States.

"If the leper is an alien, and a member of the crew, and the vessel is from a foreign port, said leper shall be detained at the quarantine at the vessel's expense until taken aboard by the same vessel when outward bound."

Furthermore, the immigration law of the United States, providing for the medical inspection of immigrants, forbids the landing of immigrants afflicted with a loathsome or contagious disease, thus furnishing an additional protection against the importation of cases of leprosy. These laws and regulations have, in a measure at least, been effective. I am informed by the sanitary inspector stationed at Havana that several persons afflicted with leprosy desiring to immigrate to Florida have been debarred from so doing by reason of these restrictions.

National control of leprosy within the United States has been frequently advocated, particularly by State and municipal boards of health, when finding such cases upon their hands and desirous of being relieved of their care. The arguments for such control, of course, are based upon the presumption of the contagiousness of the disease (even though moderately contagious) and also upon the claim that where no segregation of cases or no supervision of cases not colonized is enforced, the disease gradually increases in prevalence, and that where segregation or colonization has been enforced the disease has been made to disappear.

One reason alleged for a national establishment is the fact that in some States the disease is of so rare occurrence that the erection of a special hospital or place of confinement for lepers is scarcely justified, and it is desirable, therefore, that there should be established an asylum to which any of the States might send these unusual but highly objectionable patients. It is further urged that by reason of the difficulty of properly caring for lepers, and because of the uneasiness and excitement that would prevail in cities or localities should the presence of a leper be announced, the health authorities themselves are tempted to conceal the cases from the knowledge of the public. Thus, if there is anything in the doctrine of contagiousness whatever, the local authorities themselves may directly aid in the extension of the disease. If a national asylum were provided there would be no motive for concealment. Granted that the danger of contagion is small; granted that, in the language of another, a case of leprosy within a family should be regarded with less concern in its relation to the health of the remaining members than a case of tuberculosis; granted that the disease spreads chiefly among the lower classes; nevertheless, in the movement which is now only near the starting point, but which promises to be a controlling movement, and which will mark the close of the present century and the beginning of the next, so far as medical science is concerned, as distinctly as any other evidence of progress in the healing art (I refer to the settled resolution to exterminate every contagious disease), it would appear to be incumbent on the profession to leave nothing undone to exterminate this, together with other communicable diseases.

Now, with regard to national control, there are two considerations involved: First. Does the right of national control exist? Second. If it does, how may that right be best exercised?

Concerning the first consideration, I find a difference of opinion among eminent men with whom I have conversed, based upon their different views regarding the Constitution of the United States.

A strict constructionist will inform you that the United States Government can only legislate in accordance with powers expressly delegated by the Constitution, and that the general-welfare clause of the Constitution applies as a qualifying clause to the specified prerogatives—that the latter are only granted when necessary for the general welfare.

The States, however, may make any laws which are not forbidden by the Constitution of the United States. This view would discourage the attempt to establish a national leper hospital by the General Government, but it is claimed that the end might be met by one State establishing a hospital and being willing to receive into it the lepers consigned from other States, their expenses being paid by the latter, as has been done in a number of instances with regard to jails and penitentiaries.

Those who take a different view of the Constitution assert that it is quite within the province of Congress to appropriate a sufficient sum to establish a national leper hospital, though the necessity for it must be plainly shown. They call attention to laws already passed to which objections similar to those mentioned above were urged.

An outline of a bill for this purpose might be stated as follows:

"An act appropriating a sufficient sum to establish a national leper hospital and authorizing the national officer in charge thereof to receive, or to proceed and take possession of, a leprosy patient upon the consent of the proper authority of the State. There should be a corresponding act passed by the legislature of the State conferring power upon some official—preferably the governor, with the advice of the State board of health—to respond to such a requisition. It should be made the duty of the Government officer in charge of the institution, upon hearing of the presence of a leprosy patient, to request such authorities of the State as have been designated for that purpose by the legislature to turn over said patient to said officer for the purpose of being transferred to said hospital; and the Congressional act should also provide that the officer in charge of the institution should make such regulations for the treatment and confinement of the patient as the nature of the case demands."

It will be observed that an act of this nature would still practically leave the determination of the disposition of the patients within a State to the State itself, and leave to the discretion of the governor and the State board of health whether in a given instance the leper should be segregated. The necessity of this discretion is evident from the fact that special circumstances might so surround a given patient as to make it cruel or unnecessary to remove him. At the same time it would provide for the proper removal and proper care of those who are not surrounded by such circumstances. To the objection that some States might fail to thus legislate or avail themselves of the privilege of a national institution, it may be urged that in this event the law of February 15, 1893, which permits the making of regulations to prevent the spread of contagious diseases from one State to another, could be brought into exercise to prevent lepers leaving such a State. It is believed that this State would in time have a physical demonstration of the necessity of taking advantage of the national institution or of making equal provision itself.

This is a brief outline, which it might be necessary to modify.

To determine whether such a bill would pass it would be necessary to introduce it, but, as preliminary to its passage, its necessity would have to be demonstrated to Congress. For this purpose, and that Congress may be assured that the medical profession and sanitary officers had not acted upon insufficient premise, it is suggested that a leprosy commission should be appointed, of three or five members, to make report upon the prevalence of leprosy in the United States and the necessity and proper method of its control.

A preliminary bill might be introduced empowering the President to appoint such a commission; and, as the success of the bill would be enhanced if it called for no additional appropriation, there might be included a provision setting aside a portion of what is known as the "epidemic fund," to meet the expenses of this commission.

Whether a national leper hospital would be the result of this action or not, a commission of this character would cause a sense of relief to the people of the United States, whatever its conclusions, either affirmative or negative, as to such establishment.

As for myself, I believe that leprosy should be under national control.

BUREAU OF PUBLIC HEALTH.

During the year several bills have been introduced in Congress looking to the establishment of a bureau of public health, none of which were favorably reported by the House committee. Two bills were reported on adversely by the Secretary of the Treasury.

Following is the letter of the Acting Secretary of the Treasury upon the merits of a bill "To establish a bureau of public health within the Treasury Department of the United States:"

Treasury Department,
Washington, January 3, 1894.

Sir: I have the honor to acknowledge the receipt of the communication of the Committee on Interstate and Foreign Commerce of the 19th ultimo, inclosing bill (H. R. 4833) "To establish a bureau of public health within the Treasury Department of the United States," and requesting me to furnish the committee suggestions touching the merits of the bill and the propriety of its passage. In reply I have to state that in my opinion the objects to be attained by the passage of this bill are already met, or may be attained, under the act of Congress passed February 15, 1893, and under present executive organization. A careful perusal of the bill will show that it is to all intents and purposes a reenactment of the act of February 15, 1893, with the addition of a commission of fifteen members and an executive committee thereof consisting of five members. This addition does not commend itself to me, either on the ground of economy or of practical utility. The appointment of so many commissioners, with their compensation and other expenses necessarily to be incurred, will involve a very considerable expenditure, and in my opinion the calling together of so large a body for the purpose of devising quarantine rules and regulations and the placing of the executive power of such a body in the hands of an executive committee of five, only one member of which is by reason of his official position naturally connected with quarantine affairs, together form a plan cumbrous as compared with present methods and organization, and which in practice would be at best but experimental, and in my opinion less successful than the plan and organization which now exist. In general it may be said that what is offered as new in this bill does not add to quarantine efficiency; and the features in the bill which are really effective are already provided for in existing statutes.

It bears upon its face the evidence of having been prepared either without a full knowledge of the advance that has been made in national quarantine under the law of February 15, 1893, or with the intent to ignore the existing law and regulations.

To refer to the bill in detail, a first objection is to the title, namely: "A bill to establish a bureau of public health within the Treasury Department of the United States." This title is misleading, as nowhere within the sections which follow is there any provision for the establishment of an actual bureau of public health. The bill relates almost exclusively to matters pertaining to quarantine. This is a matter of importance, since much of the support which might be given among sanitarians and physicians of the country to whom appeals may have been made would be given on the strength of its title. The bill does not establish a bureau of public health as that term is generally understood, or if it does, then a bureau of public health already practically exists in the Marine-Hospital Service, which is now exercising every essential function that is provided for by this bill. By a bureau of public health is understood not only a quarantine organization, but the establishment of a central bureau having control over general sanitation of towns and villages, with power to demand systems of sewerage, methods of disposal of garbage, water supply, house draining and plumbing, ventilation of dwellings, schoolhouses, and other public buildings, the examination of the milk supply, examination of food and of drugs, proper disposal of the dead, the enforcement of rules regarding disinfection of dwellings after the ordinary contagious diseases, such as scarlet fever, measles, and diphtheria, and other functions too numerous to mention, but all of which may be found set forth in the report of any State board of health or of the health department of any large city. It is the desire of some sanitarians that such a public health bureau should be established, but at present all these functions are performed under State or local law, and the right as well as the propriety of the General Government undertaking so exclusive and minute a field of operation, it is believed, would not be seriously considered by Congress at the present time, nor does the bill call for any such establishment, although its title would so indicate, and by reason of this title it may receive the indorsement of those who will not look carefully into its provisions.

Section 1 divides the United States into nine sanitary districts; but one State which has given greater impetus to scientific quarantine than any other is not included in any one of these districts—namely, the State of Louisiana—and is therefore debarred from representation.

Section 2 provides for a bureau of public health, to consist of a commission of fifteen, eleven of whom shall be appointed by the President, and when actually engaged in the performance of their duties shall be entitled to $10 per diem and reasonable expenses.

Section 3 provides that the president of this commission shall receive $5 per diem in addition to the $10 per diem provided in section 2, and provides also for the appointment of a secretary at a salary of $3,000 annually.

Section 4 provides for the executive committee of the commission. This executive committee is subject to all the rules and regulations made by the commission. In connection with section 4 should be read section 24, which provides "That in the execution of all orders, etc., relating to sanitation in any branch of the public service, etc., the Surgeon-General of the Army shall perform all such duties in respect to the Army, the Surgeon-General of the Navy shall perform all such duties in respect to the Navy, and the Surgeon-General of the Marine-Hospital Service shall perform all such duties in respect to quarantine and quarantine regulations which are provided by this act." The Surgeon-General of the Army is hereby directed to perform certain sanitary duties in respect to the Army which are imposed upon him by a commission of fifteen members elected from different parts of the United States. I respectfully call attention to the possible confusion that might arise by imposing upon an officer of the Army the execution of rules and regulations for the Army made by a bureau of the Treasury Department. The same may be said with regard to the Navy.

As regards the execution of the quarantine rules by the Marine-Hospital Service, the same objection does not hold because it is a bureau of the Treasury Department. But in my opinion the Marine-Hospital Service will more intelligently and effectively execute quarantine regulations when prepared by itself than when made by a mixed commission of fifteen members. The supposed advantages to be derived from a commission of fifteen members are already possessed practically by the Treasury Department. Section 4 of the quarantine act of February 15, 1893, provides that "It shall be the duty of the Supervising Surgeon-General of the Marine-Hospital Service, under the direction of the Secretary of the Treasury, to perform all the duties in respect to quarantine and quarantine regulations which are provided for by this act."

Although the quarantine regulations are promulgated by the Secretary of the Treasury, their preparation, both by law and according to general custom in the Executive Departments with regard to such matters, is the duty of the Supervising Surgeon-General, and in the performance of this duty he has it within his power to call to his assistance whatever aid he may deem necessary. As illustrating this point I beg leave to transmit herewith Appendix A, being a statement showing the organization of the Marine-Hospital Service and its facilities both for the preparation of quarantine regulations and their execution.

Recurring again to the sections of the bill, and particularly to section 5, relating to conferences with State boards of health, etc., the provisions of this section are already met under the existing law, and in point of fact a conference of this nature was held between the State boards of health and the Surgeon-General of the Marine-Hospital Service in the city of New York after the passage of the quarantine law of February 15, 1893, and before the issue of the regulations thereunder.

Furthermore, a conference was called by the Surgeon-General of the Marine-Hospital Service in March, 1893, composed of some twenty leading State and local quarantine officers, for the consideration of quarantine measures, and remained in session two days in Washington.

From and including section 6 the remainder of the bill is practically a reenactment of the act of February 15, 1893.

The investigations contemplated by section 7 are possible under existing laws and appropriations, in accordance with which commissions have been appointed for special investigation, particularly into the nature, history, and means of prevention of yellow fever and cholera. A reference to the reports and publications of the Marine-Hospital Service will show detailed and elaborate accounts of epidemic diseases not to be found in other publications in the United States. During the past year a special commission of two officers, under the direction of the Surgeon-General, has made a most thorough investigation into the origin of choleraic outbreaks in foreign countries and the special means and routes by which this disease is conveyed through Europe to the ports having most intimate commercial relations with the United States.

I inclose for your information (Appendix B) a copy of the annual report of the Secretary of the Treasury, on pages 25 to 29 of which will be found a brief summary of the operations of the Marine-Hospital Service under the quarantine law of February 15, 1893, during the season just ended, and also (Appendix C) a brief account of the measures taken by the Surgeon-General of the Marine-Hospital Service following the passage of this act, as set forth by him in an address before the American Medical Association in June last.

The following is an epitomized statement of the quarantine system as it now exists under the authority of the law of February 15, 1893:

Quarantine rules and regulations to be enforced in foreign ports, to be enforced on board of ships at sea, and to be enforced at the maritime ports of the United States have been prepared and promulgated. These quarantine rules and regulations must of necessity be subject to occasional modification, and may be promptly modified or added to as occasion demands under existing organization and without the intervention of a complex body of commissioners. There is a multiplication of authority and a division of responsibility in the proposed commission which would likely prove fatal.

As regards the quarantine ports of the United States, a uniform system of regulations has been devised, and to secure its enforcement a special regulation has been made, and with an affirmative opinion as to its legality by the Acting Attorney-General of the United States, which requires the Surgeon-General of the Marine-Hospital Service to cause an inspection to be made of all State and local quarantines for the purpose of securing an enforcement of the Treasury regulations. I am informed by the Surgeon-General of the Marine-Hospital Service that, in conformity with this regulation, the coast of the United States, from Maine to the State of Washington, has been divided into convenient sections, and an officer detailed to make frequent inspections of every port within his section. In this manner at least once each month, and in many places more frequently, every quarantine of the United States will be subject to a visit of inspection by the national authority.

In conclusion I have to state that the efficiency of the present quarantine system has been amply demonstrated during the past quarantine season, when this country was probably more seriously threatened with the invasion of epidemic disease than at any previous period, and in my opinion to make any radical change of organization is inadvisable.

In another communication, however, I shall submit for your consideration certain additions to the present law suggested by the experiences of the past season.

I have the honor to remain, very respectfully, yours,

W. E. CURTIS, *Acting Secretary.*

Hon. GEORGE D. WISE,
Chairman Committee on Interstate and Foreign Commerce,
House of Representatives.

In view of the public questions involved it is deemed appropriate to insert here the address delivered by myself before the Committee on Interstate and Foreign Commerce of the House of Representatives, by the special request of said committee, May 18, 1894, upon the merits of a bill (H. R. 7106) "to establish a bureau of public health within the Department of the Interior of the United States."

IN RE A PROPOSED BILL TO ESTABLISH A BUREAU OF PUBLIC HEALTH IN THE DEPARTMENT OF THE INTERIOR, ETC.

[Address before the Committee on Interstate and Foreign Commerce of the House of Representatives, May 18, 1894, by Walter Wyman, Surgeon-General Marine-Hospital Service.]

MR. CHAIRMAN AND GENTLEMEN OF THE COMMITTEE: On March 28 you listened to a number of gentlemen distinguished in various specialties of medical science, who endeavored to make plain to you the great desire of the medical profession of the United States for some legislative action looking to the prevention of the introduction of epidemic or contagious diseases into the United States, the suppression of contagious diseases within our borders, the diffusion of sanitary knowledge, the collection and utilization of mortuary and vital statistics, and encouragement of State and local health organizations. They presented a bill for consideration, through the operations of which they hope that this desire of the medical profession may be gratified.

I will in a few moments refer specially to the declared objects of this bill, and wish now to say that I am in hearty sympathy with the desires and sentiments of these gentlemen which were so intelligently placed before you. These very matters have formed the chief subject of my professional thoughts for a number of years, and I have long been a student of the problems which they involve, seeking a definite solution.

But I will come at once to the bill which they have presented as their solution of these problems, and I propose now to critically examine it with a view to determining whether it is a wise and practical measure.

In the discussion March 28 the academy committee seemed desirous of making it appear that the quarantine portion of the bill was not its greater portion, that the chief objects of the bill were outside of quarantine matters and related to the establishment of some central bureau of advice and information upon the general subjects just mentioned. Yet, as pointed out to them at the time by one of your number, nearly the whole bill relates to quarantine; in other words, twenty sections out of the total twenty-three refer to quarantine matters, the remaining three (18, 20, and 21) relating to reports to Congress, mail matter, postage, appointments and salaries of officers, and estimates of expenses. There was no suggestion that the enforcement of quarantine rules and regulations should be taken from the Marine-Hospital Service, which for so many years has been charged with this work, but the bill contemplates that the making of these rules and regulations shall be transferred to the new bureau of public health and the commissioners thereof. And when it was suggested that this was encroaching upon the administrative functions of the Marine-Hospital Service, and that it might be better to leave the making of the quarantine rules and regulations as now provided for, the gentlemen of the academy committee insisted that, inasmuch as quarantine rules and regulations are based upon scientific knowledge, it would not be compatible with the dignity and importance of this proposed new bureau to deprive it of this function.

As is known to you, under the present law the Surgeon-General of the Marine-Hospital Service is charged with all the duties pertaining to quarantine and quarantine regulations which are provided for in the act of February 15, 1893. The regulations must be approved and promulgated by the Secretary of the Treasury. To aid me in preparing these regulations I called a board of medical officers of the Marine-Hospital Service. This board consisted of an ex-Surgeon-General of the Marine-Hospital Service; a surgeon of the Service who had had charge for a long period of the quarantine division in the Bureau; a surgeon who had had practical experience in charge of quarantine stations, both in the North and in the South; another who was in charge of the medical department of the Immigration Service at the port of New York, giving him an insight into the character and the necessary precautions to be taken with regard to immigrants; and still another, who was a skilled bacteriologist, a specialist in biological diagnosis, and in charge of the scientific laboratory of the Service. These gentlemen, with suggestions from myself, framed the rules and regulations to be observed with regard to vessels, passengers, and cargo in foreign ports and on the voyage.

For the quarantine rules to be observed at ports of the United States a similar board was called together. All the State and local regulations had been previously examined, and you will remember that the law requires that if any such are found insufficient the Secretary of the Treasury shall make additional ones. It was evident there were some which were deficient, and a minimum standard was therefore determined upon, namely, a code of rules which should be required at every quarantine station in the United States. A uniform quarantine code for the maritime ports of the United States had long been the desire of quarantine and sanitary officers; for years it had been their chief complaint that no uniformity existed, and heretofore all efforts to this end, through conventions and otherwise, were futile. For the first time in the history of the United States such a code was prepared, adopted, and promulgated last season under the law of February 15, 1893.

After these rules and regulations for domestic quarantine had been prepared by the board I have just mentioned, and before the adjournment of this board, a conference was called by myself of the quarantine officers of the Atlantic and Gulf coasts, representing the cities and ports of Portland, Boston, Providence, New Haven, New York, New Jersey, Philadelphia, Wilmington, Del., Baltimore, Norfolk, Wilmington, N. C., Charleston, Savannah, Florida, Mobile, New Orleans, and Texas.

This conference was called to order March 16, and remained in session two days, the first day being devoted to a consideration of the rules which had been prepared, and discussion thereof, with the understanding that there would be no vote. The second day the rules were again read seriatim, discussed, and voted upon. After adjournment of the conference the board continued its labors, paying special attention to the views expressed in the conference. The rules thus perfected were then presented by myself to the Secretary of the Treasury, were promulgated by the latter April 4, and a letter inclosing them was sent to each maritime quarantine officer, calling attention to the law and to the fact that these were minimum requirements, and requesting an expression of willingness and ability to execute them, to which satisfactory responses were received.

Now, for the enforcement of these rules for domestic quarantines the following additional regulation was promulgated by the Secretary of the Treasury, after its legality had been passed upon by the Attorney-General of the United States. The regulation and the instructions in accordance therewith have been issued in the following form:

INSTRUCTIONS TO MEDICAL OFFICERS OF THE MARINE-HOSPITAL SERVICE DETAILED TO MAKE INSPECTIONS OF STATE AND LOCAL QUARANTINES.

TREASURY REGULATIONS.

* * * * * * *

In the performance of the duties imposed upon him by the act of February 15, 1893, the Supervising Surgeon-General of the Marine-Hospital Service shall, from time to time, personally, or through a duly detailed officer of the Marine-Hospital Service, inspect the maritime quarantines of the United States, State and local, as well as national, for the purpose of ascertaining whether the quarantine regulations prescribed by the Secretary of the Treasury have been or are being complied with. The Supervising Surgeon-General, or the officer detailed by him as inspector, shall at his discretion visit any incoming vessel, or any vessel detained in quarantine, and all portions of the quarantine establishment for the above-named purpose and with a view to certifying, if need be, that the regulations have been or are being enforced.

J. G. CARLISLE, *Secretary.*

GENERAL INSTRUCTIONS.

A. Your inspections will include all ports within your district where vessels are allowed to enter and discharge cargo and ports which may be used as ports of call.

B. A separate report will made of each station visited.

C. Visit every part of the quarantine establishment and take necessary precautions to prevent the conveyance of contagious or infectious disease through the medium of your own person.

D. Visit the custom-house for the purpose of ascertaining whether the regulations with regard to bills of health and quarantine certificates are being observed; also the immigration station for any pertinent information.

E. Reports of a statistical character and descriptive of the quarantine, called for herein, need be made but once in every six months, namely, on the date nearest the 1st of January and the date nearest the 1st of July; but any changes that have been made since the last general report should be immediately recorded.

In making your report you will follow the special instructions in their order, referring to each by number.

SPECIAL INSTRUCTIONS.

1. Describe the quarantine station, location, buildings, anchorages, etc. Give limits of anchorage for noninfected and for infected vessels, facilities for inspection of vessels, apparatus for disinfection of vessels and of baggage, facilities for removal and treatment of the sick and for the removal and detention of suspects, mail and telegraph facilities, etc.

2. Give personnel of the station or port, name of the quarantine officer or officers, post-office address, total number of officers and subordinates, etc.

3. Transmit copies of the laws under which the local quarantine is maintained and copies of the quarantine regulations, and describe the quarantine customs of the port as they are carried out.

NOTE.—There are sometimes slight, but possibly important, variations from the letter of the local regulations in the administration of quarantine. Also local regulations generally allow a wide latitude to the quarantine officer, and how this latitude is used, i. e., how the quarartine officer interprets the spirit of the regulations, is very important.

4. State what quarantine procedures, either under printed regulations or by custom, are enforced at the port, in addition to the requirements of the Treasury Department. It should also be stated whether there is undue or unnecessary detention or disinfection of vessels.

5. State whether the inspection is maintained throughout the year or for what period, and what treatment of vessels is enforced during the entire year.

NOTE.—Many ports on the South Atlantic Coast (e. g., Charleston, Savannah, and Fernandina) require certain ballasts to be discharged in quarantine without regard to season.

6. Are vessels from other United States ports inspected?

7. Describe quarantine procedures in the inspection of vessels, and, if infected, the treatment. Give time in quarantine (*a*) between arrival and commencement of disinfection, (*b*) time occupied by disinfection, and (*c*) time after completion of disinfection of vessels until discharge.

NOTE.—Quick or slow handling of a vessel is of more importance commercially than the question of fees. The time lost is the vessel's heaviest expense, generally.

8. What communication is held with vessels in quarantine (and before quarantine by pilots, etc.) and how regulated? Is there any intercommunication allowed among vessels in quarantine?

9. State what will be done with a vessel infected with cholera; second, a vessel infected with yellow fever; third, a vessel infected with smallpox (said vessel carrying or not carrying immigrants), and what conditions are regarded as giving evidence of the vessel's infection in each case.

10. State whether records are kept at the station of the cases of disease that have occurred during the voyage, on arrival, and during detention.

11. Transmit schedule of quarantine fees, and give other fees and expenses necessarily and usually attendant on quarantine, as tonnage, ballast, wharfage charges, etc.

12. Make a statement showing the number of vessels arriving at the port during the preceding calendar year, by months (*a*) from foreign ports; (*b*) from foreign ports in yellow fever latitudes via domestic ports; (*c*) from domestic ports. Show

also the character of the commerce carried on by the port, i. e., from what countries chiefly the vessels come, and whether in cargo, ballast, or empty.

13. State results of your visit to (*a*) the custom-house; (*b*) the immigration bureau.

14. State whether in your opinion the quarantine facilities are sufficient to care for the shipping entering the port.

15. Name the quarantine regulations of the Treasury Department which are not properly enforced, and state specifically whether the regulations regarding inspection and disinfection, and particularly the period of observation after disinfection, of vessels are observed.

16. Mention any facts which in your opinion should be known to the Department, bearing directly or indirectly upon the quarantine service, and make such recommendations as seem proper.

WALTER WYMAN,
Supervising Surgeon-General Marine-Hospital Service.

NOTE.—Report to be written on legal cap paper (on one side only), signed, and inclosed in this blank as a cover.

In conformity with this regulation and the printed instructions, all the quarantines of the United States from Maine to the State of Washington are subject to periodical inspection under the supervision of the Marine-Hospital Bureau. In accordance with this regulation, also, an inspection was maintained at the New York quarantine the greater part of last season, both to render such aid as might be given and to insist upon the enforcement of the Treasury regulations.

I submit that this method, above described, of making quarantine regulations, prepared, as they were, by men of scientific attainments, familiar with actual working details at quarantine stations, familiar with all matters pertaining to immigrants and, too, with the complicated machinery of governmental methods and associated services in Washington, is superior to that suggested in the proposed bill, namely, by a commissioner of public health in the Interior Department, with an advisory council of forty-four members (one from each State of the Union), unacquainted with one another, and unfamiliar with governmental methods and existing branches of the Executive Departments. Or, if the advisory council is not to assist in making these regulations, which seems a matter of doubt under the terms of this proposed law, then I submit that the method so successfully adopted is a more practical way of framing regulations than to intrust them to one man alone, namely, the commissioner of health, an officer of the Interior Department, to be executed by the Secretary of the Treasury or the President.

There are no more experienced men in both the theoretical and practical workings of quarantine than are to be found in the medical corps of the Marine-Hospital Service. There are scientific investigations being constantly made in the laboratory of the Service, which is as well supplied with every modern apparatus or instrument as perhaps any laboratory in the United States. These investigations relate principally to the cause, nature, life history, and prevention of epidemic diseases; and it may be added that instruction is given in this laboratory both to the officers of the Service and to local quarantine officers in biological diagnosis of contagious diseases.

In framing regulations, the Marine-Hospital Bureau, besides its own scientific and practical officers, has the assistance of the law officer of the Treasury Department, detailed from the Department of Justice, and the benefit of the counsel and advice of the heads of the several divisions in the Treasury Department conversant with all the executive and legal details which might require consideration, and finally of the Assistant Secretary and the Secretary of the Treasury himself. It is difficult to conceive of any question connected with quarantine regulations which can not be decided properly and promptly by the Marine-Hospital Service and the Treasury Department, to which it belongs.

Now, hand in hand with the making of quarantine rules goes their execution. I contend that they can be best executed when emanating from the same body or service that is charged with their practical application. In the proposed scheme of having one Department make the rules and another execute them, I can readily see the possibilities of clash, the shifting of responsibility from one to the other, and crimination and recrimination after the resultant disaster.

Moreover, speaking for the Marine-Hospital Service, to have an outsider make the rules and command us to enforce them would deprive the corps of its esprit, than which nothing is more essential for effective service. It is this esprit du corps that has gained for the Service its successes in the past.

I will not here dwell upon, but simply refer to, the alacrity with which the members of this corps have sprung to their posts of danger when ordered, submitting themselves to all kinds of exposure and privations in their efforts to speedily check the spread of epidemic disease, and facing a death which has come to a number of its officers.

The proposed law would make the Marine-Hospital Corps simply a hewer of wood and a drawer of water, with all the responsibility—the terrible responsibility—of a successful enforcement; while the commissioner of public health in the Interior Department might simply from his office declare what should be done, leaving further responsibility to the Marine-Hospital Bureau and its officers. Such a status would inevitably destroy the enthusiasm of our officers, an enthusiasm which is felt, not only for the character of the work they are doing, but for the peculiar service which they themselves by their own efforts have made illustrious, and in which they feel a peculiar pride.

There is another consideration which shows that the proposed arrangement is impracticable. Certain difficulties might suddenly arise with regard to the enforcement of quarantine regulations, which might require prompt amendment or additions thereto, and for the executive force to then be obliged to await the decision of an officer in another Department would cause delay that might be fatal. For example, as matters now stand, if the Surgeon-General is informed that certain quarantine regulations are insufficient, and a new regulation is immediately necessary, he may prepare the same without waiting to explain its necessity and convince the commissioner of public health thereof. Every epidemic is apt to produce new conditions and to demand some variation in suppressive measures, and during the past season instances of this kind actually occurred.

Finally, I have to state that the quarantine season is now upon us. Amended rules and regulations have been prepared and are before you. Cholera has been reported in Belgium, Portugal, and France. The return of it is expected in Italy and Germany. It has been in Russia and Constantinople all winter, and in Tripoli and other places. To disturb the present efficient organization at any time is unnecessary, and to adopt new procedures now would likely be hazardous.

It is now necessary to consider this matter from a departmental and more general standpoint. The bill proposes to establish in the Department of the Interior, and under the direction and supervision of the Secretary thereof, a national bureau of public health, which with its commissioner and possibly its advisory council, is to make rules and regulations for maritime quarantine.

Now, maritime quarantine, as its name implies, relates to commerce, to vessels and crews, and has intimate relations with the shipping laws, the customs service, immigrant inspection, etc., all of which are regulated by the Treasury Department. What propriety there could be in the Department of the Interior having charge of quarantine with these surrounding conditions it is difficult to conceive. This bill would impose upon the Secretary of the Interior an entirely new kind of work, and would make his Department lap over or extend into the Treasury Department. In his efforts to carry out this law the Secretary of the Interior would find himself surrounded on all sides by the various branches of the Treasury Department, into whose jurisdiction he would be constantly intruding. A vessel arrives at quarantine; the customs inspectors are interested in that vessel as well as the quarantine officers. The Revenue-Cutter Service may be interested in that vessel for violating the navigation laws. The Immigration Service is very much interested because it carries immigrants, and so is the Bureau of Navigation, which looks after the fines and penalties.

The Inspection Service of Steam Vessels looks to the personnel of the pilots, and, if the vessel is of American registry, has supervision of the boilers, air space, ventilation, etc., and the Marine-Hospital Service cares for the sick and disabled among the crew. Now, these are all Treasury bureaus or divisions, and it sometimes happens that in the exercise of their various functions, with regard to this vessel, the different bureaus of the Treasury Department may have some misunderstanding. Customs authorities have claimed right of precedence over quarantine authorities in boarding vessels. Immigrant inspectors have claimed the same. There are certain precautions to be taken by the customs inspectors when a vessel is in quarantine. How necessary, therefore, for all to be under one head. There would be unavoidable clash and maladministration, with two heads of large departments of the Government attempting to manage subtle affairs upon a big ocean vessel arriving at an American seaport.

The very terms of the bill show its incongruity, for while it calls for the establishment of this bureau within the Interior Department, under the direction and supervision thereof, in several sections of the bill (3, 9, and 10), the Secretary of the Treasury is directed to perform certain functions.

Moreover, section 17 provides that the commissioner of public health, without previous assent from the head of a Department, may request of the President a detail of officers from the several offices of the Government for temporary duty, to act under the direction of said bureau, to carry out the provisions of this act, thus giving the commissioner the power to strip any service of its active force or agents, despite other need for the same.

Coming now to the additional expenses incurred by the proposed establishment of this bureau, it will be seen (section 1) that there is to be a president with $6,000 per annum, an advisory council of one from each State, who shall be entitled to actual traveling expenses and $5 per diem for subsistence while engaged in the performance of their duties; and these duties are to consult with the commissioner of public health at the annual or at special meetings.

Section 20 provides for the appointment of 6 sanitary inspectors, at $1,800 per annum, making $10,800 per annum; a chief clerk, at $1,800; 1 clerk of class 3, at $1,600; 1 clerk of class 2, at $1,400, and 6 clerks, at $1,000 per annum; 1 messenger, at $840, and 1 watchman, at $720 per annum; making a total of $30,560 per annum for salaries in this Bureau.

I beg leave now to refer, as I stated that I should do at the beginning of my address, more specifically to the declared objects of the bill, irrespective of quarantine proper. These objects are practically the same as were mentioned in the first bill presented by the academy committee, and to which the honorable the Secretary of the Treasury objected, and from whose letter to your chairman, of January 3, I quote as follows:

"The bill does not establish a bureau of public health as that term is generally understood, or, if it does, then a bureau of public health already practically exists in the Marine-Hospital Service, which is now exercising every essential function that is provided for by this bill. By a bureau of public health is understood not only a quarantine organization, but the establishment of a central bureau having control over general sanitation of towns and villages, with power to demand systems of sewerage, methods of disposal of garbage, water supply; house draining and plumbing; ventilation of dwellings, schoolhouses, and other public buildings; the examination of the milk supply; examination of food and of drugs; proper disposal of the dead; the enforcement of rules regarding disinfection of dwellings after the ordinarily contagious diseases, such as scarlet fever, measles, and diphtheria, and other functions too numerous to mention, but all of which may be found set forth in the report of any State board of health or of the health department of any large city. It is the desire of some sanitarians that such a public-health bureau should be established, but at present all these functions are performed under State or local law, and the right, as well as the propriety, of the General Government undertaking so exclusive and minute a field of operation, it is believed, would not be seriously considered by Congress at the present time. Nor does the bill call for any such establishment, although its title would so indicate, and by reason of this title it may receive the indorsement of those who will not look carefully into its provisions."

Now, from a careful perusal of this new bill, and from the remarks made by the gentlemen on March 28, it appears that, quarantine aside, what is desired and hoped to be achieved through the instrumentality of the bill is as follows, namely:

Collection of information regarding prevalence of contagious and epidemic diseases in this and other countries.

Publication of information thus obtained in a weekly bulletin.

Collection and utilization of mortuary and vital statistics.

Uniformity of system in registration of births, marriages, and deaths.

Suppression of contagious diseases within our own borders.

Diffusion of sanitary knowledge.

Encouragement of State and local health organizations.

Investigation by experimental and other methods of the causes and means of prevention of disease.

Advice and information to be given to the several departments of the Government and executives and health authorities of the several States on such questions as may be submitted by them.

It will be seen that, summarized, the above objects may be stated to be gaining and spreading of information and giving advice.

Now, there are two considerations to be taken into account with regard to these desired objects: One is, How much can be done under the peculiar construction of our Government—in other words, under the Constitution of the United States; the other is, How much is being done by State governments and existing branches of the General Government.

In the addresses which were delivered before you on Wednesday the desires of sanitarians and of medical men were forcibly expressed, just as though all these desires might as well be gratified as not. But there are limitations to the exercise of health prerogatives by the National Government, and these limitations find their corresponding privileges in the rights and constitutions of the several States. It is impossible for us to be guided by precedents set by foreign Governments, monarchical and even despotic in character. An attempt on the part of the National Government to interfere in domestic sanitation, to enforce laws regarding plumbing, drainage, light, heat, and ventilation of public buildings, the placarding of houses containing contagious disease, or imposing restraints upon the inhabitants thereof, would meet with violent and legally authorized opposition on the part of the citizens of the several States and municipalities. Nor does this bill contemplate such action on the part of the Government. While Congress may legislate to advance the interests of science, still the executive rights which the Government has in sanitary matters are derived chiefly from the clause of the Constitution giving Congress the power to regulate commerce; and in regulating commerce it has the right to strip it of its disease-bearing agencies. Moreover, even if the right of minute surveillance existed, no example worthy of imitation can be taken from any foreign Government whose physical conditions so materially differ from our own.

As stated in an address which lies before you, even—

"History furnishes no models for the construction of any sanitary institution adapted to the wants of this nation. Lycurgus, with his Spartan laws, adapted to a small and peculiar province, the laws of Moses, the quarantine laws of the fifteenth century—none of these furnish a sanitary framework for the United States. What nation has such conditions of boundary and magnitude as our own? What can England, with its Government on a 'tight little isle,' and its possessions scattered over the earth, what can a nation with such physical conditions teach us? What can France, or Spain, each with a territory surpassed by a single one of the United States, teach us? Or Germany, with scarcely any seaboard at all? What conditions prevail in Russia, Italy, or Turkey, that prevail here?

"We may adopt scientific appliances, we may study technique in foreign lands and observe the application of sanitary principles, but we must be a law entirely unto ourselves with regard to our sanitary policy."

We must study, too, our national organization, and work out a sanitary system in harmony with it—

"Broadly stated, this sanitary policy expects of each State a sanitary autonomy whose influence should be appreciated by every individual in every hamlet, however small in its domain. It contemplates a State pride in the development of sanitation, a self-reliance, and an unwillingness to surrender functions or call for aid from the General Government excepting after clearest convictions of propriety or necessity."

As we look to the State for the development of its own educational system, so must we look to the State for the education of its people in the establishment of sanitary surroundings and in the matter of personal prophylaxis. In point of fact, the growth of State and municipal health organizations within the last ten years has been remarkable. Of the 44 States, 38 have now State boards of health.

Before you are the annual health reports of several States—Massachusetts, Pennsylvania, New York, and New Jersey. These are but samples, but within their covers you will find laws, regulations, statistical information, the results of scientific investigation into the causes of disease, articles upon plumbing, sewerage, water supply, heat, the ventilation of schoolhouses; in short, all the matters affecting the public health. Now, under the proposed bill of health the National Government would only be advisory to these State boards. The bill does not specify the use of any executive force on the part of the General Government with regard to matters contained within these State health reports. Yet, as though to bring the United States into unfortunate contrast with England, one of the speakers on March 28 referred to the superior sanitary organization of the latter country and the great advances made through the agency of the local government board. This local government board, however, has more than advisory rights, and would never have achieved its success if its powers from the start had been limited to advice.

Much has recently been said regarding internal sanitation and internal quarantine, and the necessity of suppressing the ordinary contagious diseases (diphtheria, typhoid fever, tuberculosis. et.c), irrespective of the great epidemic diseases, cholera, yellow fever, and smallpox; and in the bill under consideration it is provided (section 12):

"That the commissioner of public health shall, under the direction of the Secretary of the Interior, cooperate with and aid State and municipal health authorities in the execution and enforcement of the rules and regulations of such authorities, and in the execution and enforcement of the rules and regulations made by the commissioner of public health and approved by the President of the United States, to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, and into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia."

The above is presented as though it were a new provision of law, whereas a like provision already exists in section 3 of the act approved February 15, 1893.

Under this act regulations have been made, promulgated, and executed, under the direction of the Secretary of the Treasury, to prevent the spread of yellow fever from one State to another, and other regulations have been prepared to prevent the spread of other contagious or infectious diseases.

As to internal sanitation the proposed bill nowhere provides for it specifically.

Yet the need of internal sanitation has been dwelt upon as though the General Government could undertake it and as though this bill provides that it should.

There is one clause of the bill which, if passed, might be so construed as to give the proposed bureau local and even domiciliary supervision, namely, the clause in section 1 which states that "this bureau shall, in general, be the agent of the General Government in taking such action as will most effectually protect and promote the health of the people of the United States." This clause, with a liberal interpretation, gives so wide, and at the same time so minute a power, that, as I am advised, it would prove not only repugnant to State authorities and conflict with State laws, but the functions which might be attempted under it would be unconstitutional. I quote, as stating in a general way the views I have heard expressed by a number of eminent men on this subject, some of them Members of Congress, an editorial in the New York Times of August 2, 1893:

"The sanitary condition of cities and towns and the control of the influences which affect the health of the people are matters that come very distinctly within the police power of the States. Regulations and restrictions for the protection of the public health can be best established and administered by State and local authorities, and the nearer their administration comes to the people affected the better. The subject may be neglected in some States, or they may be slow in appreciating its importance and providing for the sanitary well-being of their people, but that fact does not impair their authority or transfer it elsewhere. They may be dilatory or negligent in many things that the National Government can not look after for them.

"When it comes to dealing with contagious diseases brought from other countries the matter takes a different aspect. The enforcement of measures for preventing their introduction at our seaports or over our borders necessarily involves interference with foreign commerce. Vessels have to be detained, inspected, and disinfected, and passengers and merchandise have to be subject to regulations that concern the people and the interests of the country regardless of State lines. National jurisdiction has here an appropriate field and is alone adequate to its requirements. Quarantine regulations affecting communication with foreign countries should be national and national only. The same principle may apply in some degree to protection against the transmission of infectious diseases from one State to another through the agencies employed in interstate traffic, as interference with those agencies pertains to the regulation of commerce between the several States. But there is seldom any occasion for interference in the case of infections originating in this country.

"There might be a useful function for a national board of health in the collection and diffusion of statistics and information relating to matters that concern the public health, and in consulting and advising with State and local authorities. But no power or jurisdiction could be exercised by such a board, by whatever name it might be called, over those authorities, and it could in no way deal practically with internal sanitation."

Coming now to the second matter for consideration, namely, how much is being done by existing branches of the Government service, for the purpose of saving time I would refer to the pamphlet before you, entitled "Government Aids to Public Health," which, however, does not contain an exhaustive statement.

Concerning the collection of information regarding the prevalence of contagious and epidemic diseases in this and other countries, and the publication of the information thus obtained in a weekly bulletin, you have before you a bound volume of such weekly bulletins for the year ending December 31, 1893. This volume, published by the Marine-Hospital Bureau, contains, first, domestic information, viz, abstracts of the reports of States and municipalities, special reports concerning contagious diseases, mortuary reports from the different cities of the United States, reports concerning immigration, and reports from the Department of Agriculture, showing the temperature and rainfall in the various cities from which mortality reports are received; second, foreign information, received through the State Department and from officers of the Marine-Hospital Service stationed abroad, relating to like subjects.

Concerning the experimental investigation into the causes of disease, I have to state that such experiments are going on constantly in the laboratory of the Marine-Hospital Service, and that special commissions, either under present laws or by special resolution of Congress, may be appointed at any time for this purpose. I have here a volume prepared by Dr. Shakespeare, who was specially commissioned by the President to visit Europe and India and prepare a report upon the prevalence, history, and origin of cholera. His expenses were paid from the "epidemic fund," and without special legislation.

I will further state that, under the auspices of this Bureau, during the past year, a commission consisting of Surgeon Irwin, of the Marine-Hospital Service, and Dr. Walter Kempster, an expert, visited all portions of Europe, as well as Egypt and Palestine, in further investigation of the prevalence of cholera, its method of introduction into Europe, and the special sources of danger to the United States through the importation of merchandise from infected countries.

P. A. Surg. J. J. Kinyoun was detailed, in 1890, to visit Berlin and Paris for the purpose of investigating and familiarizing himself with the methods of the distinguished Professors Koch and Pasteur.

Other experts have been employed by the Treasury Department and sent to points of danger, and their expenses paid out of the "epidemic fund." The inspections made by them have embraced the cities of Central America and Mexico.

The annual reports of the Marine-Hospital Service contain numerous articles upon the cause, life history, and prevention of contagious diseases, and in further illustration of the scientific work of the Bureau I would invite your attention to the report of the present House Committee on Ventilation and Acoustics, just published, containing the results of a scientific examination of the air of the House of Representatives for the detection of impurities therein deleterious to health, made by an expert officer of the Marine-Hospital Service.

There remains, therefore, of the avowed purposes of the bill to be mentioned only statistics regarding marriages, births, and deaths. The Census Bureau furnishes much of this information, though, it is admitted, not as frequently as could be desired.

I by no means mention the above facts for the purpose of asserting that all is being done that is desired, but simply to show the committee what is being done, and that with some extension of present organization and facilities much more could be done without breaking up existing institutions, without disturbing organizations that have reached their present degree of efficiency because founded on the necessities of the Government, and because year by year they have been strengthened and improved by intelligent administration and Congressional action.

A few words now regarding the organization and scope of the Marine-Hospital Service.

MEDICAL CORPS.

The medical corps of the Marine-Hospital Service, as will be seen by the small blue book before you, consists of a supervising surgeon-general, 16 surgeons, 26 passed assistant surgeons, 19 assistant surgeons, and 93 acting assistant surgeons, making a total of 154. The regular corps, that is to say, all of the above excepting the acting assistant surgeons, are appointed by the President after thorough physical and professional examination. The acting assistant surgeons are appointed by the Secretary of the Treasury, on recommendation of the Supervising Surgeon-General, who satisfies himself as to the professional qualifications of the officer. The employment of acting assistant surgeons in times of emergency for temporary service, and the discontinuance of their services when the emergency is over, furnishes an excellent method of increasing or contracting the medical corps as occasion requires.

The acting assistant surgeons are men who have been long in the Service and are trained in Government routine. When newly appointed in emergency they are usually assigned to a marine hospital under the observation of the commanding officer and one of the older assistants, detailed to meet the emergency.

I have heard that intimations have been made concerning the youth and inexperience of the members of the regular corps, the absurdity of which is shown by a table which I have caused to be prepared giving the age and date of graduation of every officer of the Service. From this table it will be seen that the average age of the 16 surgeons is 50 years, the average age of the 26 passed assistant surgeons is 35 years, and of the 19 assistant surgeons, 29 years.

The medical colleges represented are as follows:

Medical College of Maine.
Western Reserve Medical College.
Jefferson Medical College, Philadelphia.
Pennsylvania Medical College.
Chicago Medical College.
Rush Medical College.
University of Georgetown, District of Columbia.
University of Michigan.
Columbian College, Washington, D. C.
Bellevue Hospital Medical College, New York.
National Medical College, Washington, D. C.
University of Pennsylvania.
University of Maryland.
College of Physicians and Surgeons, New York.
College of Physicians and Surgeons, Baltimore.
College of Physicians and Surgeons, Boston.
Dartmouth Medical College, New Hampshire.
McGill College, Montreal, Canada.
Harvard Medical School, Boston.
Howard University, Washington, D. C.
Medical College of South Carolina.
Virginia Medical College.
University of Virginia.
Miami Medical School, Cincinnati.
Long Island Medical College, New York.
St. Louis Medical College.

It will thus be seen that the members of this corps are fairly representative of the medical profession of the country. Many of them, in spite of the fact that they are subject to change of station every four years or oftener, have held and are now holding professorships in the medical colleges of the cities in which they are stationed.

Concerning the new admissions to the corps, the law requires that they shall be appointed to the grade of assistant surgeon only, and provision is made for subsequent promotion. The examination is held once or twice a year, as occasion requires, and the applicant must pass a very severe test, making an average of 80 per cent on all branches. The successful candidates are relatively few. For example, this month, out of 29 who appeared for examination, only 4 made the required grade. These new appointees represent the very best men among the newer graduates of the colleges; but very rarely do they come direct from the medical college, most of them having had hospital or private practice before seeking admission to the corps. Out of the total 61 medical officers, 53 had hospital practice before entering the Service, 7 were engaged in private practice, and only 2 had neither private nor hospital practice.

There are 19 hospitals owned and operated by the Service, and 95 additional relief stations, where at contract hospitals seamen are admitted and treated by acting assistant surgeons.

DISTRIBUTION AND QUALIFICATIONS OF THE CORPS.

The officers of the medical corps, just mentioned, are stationed in every important port on the coast, lakes, and rivers, and being trained in the execution of Government business, become valuable agents for the immediate execution of any sanitary measures which may be imposed upon them by telegraph or otherwise from the Bureau. It is always possible for the Marine-Hospital Service, in any part of the country, on the shortest notice, to have qualified agents at a place of danger. There is scarcely an officer of the regular corps who has not had actual quarantine experience, and the corps numbers among its members men whose names have become national by reason of their effective service in various epidemics. The corps embraces a number of skilled bacteriologists, also men who have had large practical experience in the treatment of yellow fever and other contagious diseases, men thoroughly acquainted with all the military duties connected with sanitary cordons, detention camps, and with the methods of train and vessel inspections, scientific disinfection, etc. The effectiveness of this corps is the result of special care exercised to secure within it men who, by natural inclination and special education, are fitted for sanitary work, and is also the result of long and active experience.

The Marine-Hospital Service dates as far back as 1798. It was reorganized and put upon its present basis in 1871. Though established for the purpose of caring for sick and disabled seamen of the merchant marine of the United States, there have been from time to time other responsibilities imposed upon it, growing out of the necessities of other branches of the Government with which it is intimately and necessarily associated. For example, the Revenue-Marine Service, a branch of the Treasury Department, relies upon the Marine-Hospital Service for the physical examination of its officers and men and their professional treatment when sick or disabled. The Life-Saving Service relies upon the Marine-Hospital Service for the physical examination of the keepers and surfmen. Hundreds of rejections of physically unsound men seeking to become surfmen have been made by the officers of the Marine-Hospital Service. The Steamboat-Inspection Service, a most important branch of the Treasury, relies upon the medical officers of the Marine-Hospital Service for a determination as to the ability of the pilots to distinguish signal lights, and large numbers of applicants for pilots' license are annually rejected by the officers of this service on account of color-blindness. The Immigration Bureau relies by law upon the Marine-Hospital Service for the medical inspection of immigrants.

Naturally, too, by reason of the intimate association of the Marine-Hospital Service, through its sailors, with shipping and commerce, the National Government has imposed upon this Service the execution of the national quarantine laws, to which reference has already been made. I will only add here that so far as national quarantine is concerned, the Service, by tradition and constant activity, save for a period of four years, is the natural executor of the same. National quarantine received its first executive impulse through the first Surgeon-General of the Marine-Hospital Service, Dr. John M. Woodworth, in 1878. Both prior and subsequent to this last date the Bureau has controlled, wholly or in part, epidemics of yellow fever and of smallpox; notably, yellow fever in 1873, 1876, 1877, 1878, 1882, 1887, 1888, and in 1893, the Brunswick epidemic, when it was confined within the cordon on lines established by the Service.

It also took charge of railroad quarantine against smallpox in Canada in 1885, and at Harris Neck, Ga., in 1891, it stamped out the disease.

It had complete control of the quarantine measures against yellow fever in Texas in 1882, and in Florida in 1888.

THE NATIONAL QUARANTINE STATIONS.

The Marine-Hospital Service has under its immediate control ten national quarantine stations, equipped with modern appliances for disinfection of vessels, hospitals for the care of the sick, and barracks, where required, for the detention of suspected immigrants.* These stations are so far remote from populous centers as to be seldom visited, but their completeness and the scientific care exercised in isolation of the sick, the surveillance of those suspected and held under observation, the cleansing and disinfection of vessels, has excited the surprise and commendation of the few Members of Congress who have visited one or more of said stations. There is a fleet of thirteen vessels connected with these stations, three of them being old vessels turned over from the Navy for the purpose of receiving and housing people in quarantine.

COOPERATIVE ASSOCIATIONS.

Now, referring to the work done by the Marine-Hospital Service for other branches of the Government—namely, the Revenue-Marine Service, the Life-Saving Service, Steamboat-Inspection Service, and Immigration Service—a return service on the part of these branches of the Government adds to the strength and ability of the Marine-Hospital Service for quarantine work. For example, the Revenue-Cutter Service, under the same Secretary as is the Marine-Hospital Service, may be called upon at any time, and frequently is, to assist in quarantine measures through the medium of their fleet of vessels. During the past summer revenue cutters have patrolled the Southern coast in aid of the quarantine cordon around Brunswick. They have carried medical officers and supplies to the Sea Islands, off the coast of South Carolina, in the sanitary work demanded of the Marine-Hospital Service by reason of the great storm. They have furnished vessels for the Marine-Hospital Service repeatedly in New York Harbor, and, in fact, practically form a fleet subject to demand for service at any time in the aid of quarantine. During the past summer, when it was feared that the immigrant detention camps at Camp Low and at Delaware Breakwater, both under the control of the Marine-Hospital Service, might of necessity be occupied by immigrants held under observation, an arrangement was made with the Revenue-Marine Service for the immediate detail of their enlisted and armed men from the several cutters, to form the necessary guards around these camps, the places of the enlisted men to be supplied by new enlistments on the vessels.

The Steamboat-Inspection Service, in return for the examination of pilots, furnishes experts to examine the hulls, boilers, and machinery of the vessels which belong to the Marine-Hospital Service.

The Life-Saving Service, on request of the Supervising Surgeon-General of the Marine-Hospital Service, is required by its superintendent to watch carefully for all dunnage and other stuff that might float ashore from infected vessels, thrown overboard before said vessels reach port; to gather up with rakes such material and burn it.

The presence of medical officers at the immigration reception stations at the several ports enables the Bureau to keep fully informed with regard to immigrants and their baggage, which constitute so large a proportion of the danger in the matter of epidemic importation.

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*These stations are located at Delaware Breakwater; Reedy Island, Delaware River; Cape Charles, Virginia; Blackbeard Island, Sapelo Sound, Georgia; Brunswick, Ga.; Dry Tortugas, Fla.; Ship Island, Gulf of Mexico, off the coast of Mississippi; San Diego, Cal.; Angel Island, San Francisco Bay, California; Port Townsend, Wash.

OPERATIONS OF MARINE-HOSPITAL SERVICE.

The operations of the Marine-Hospital Service, independent of quarantine, during the fiscal year ended June 30, 1893, may be summarized as follows: Total number of sailors treated in the hospitals and dispensaries, 53,317, of which number 14,857 were treated in hospital, the remainder being office or dispensary patients. There were 1,353 pilots examined for color-blindness, of which 48 were rejected. One thousand and ninety-five surfmen and keepers of the Life-Saving Service were examined, of which number 41 were rejected for physical causes. Two hundred and seventy-nine seamen of the Revenue-Marine Service were examined before shipment as to their physical fitness, and 22 were rejected.

With regard to funds, the quarantine service is maintained by a yearly appropriation for the ordinary maintenance of the ten national quarantine stations. In addition to this there is what is known as the "epidemic fund," which is placed at the disposal of the President, to be used under his direction in any manner he sees fit, to prevent the introduction and spread of epidemic diseases. It is from this fund that the expenses of the foreign quarantine and extraordinary precautionary measures in this country have been paid.

The Marine-Hospital establishment, independent of quarantine, is maintained by a continuing fund derived from the tax on foreign tonnage.

In conclusion, referring again to the proposed bill to establish a bureau of public health in the Interior Department, etc., which bill, I learn, was on the 16th instant introduced in the House, and is now House bill 7106, I beg leave to invite your attention to the letter of the Acting Secretary of the Treasury, dated May 17, stating the objections thereto on the part of the Treasury Department. The bill seems to ignore existing statutes, and effects but little change other than the establishment of a new bureau. Quoting from the Secretary's letter:

"The bill in question is largely a reenactment of the act of February 15, 1893, as will be seen by a comparison of their respective provisions."

In closing this report I have to acknowledge the assistance of the medical officers detailed for duty in charge of the several divisions of the Marine-Hospital Bureau and the faithful and efficient services of the clerical force. One-half of the total number of marine hospitals and United States quarantine stations are illustrated herein. It is proposed to illustrate the remaining hospitals and stations in the report for 1895.

I have the honor to remain, very respectfully, yours,

WALTER WYMAN.

Supervising Surgeon-General United States Marine-Hospital Service.

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